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LESSONS FROM NATURE.

LESSONS FROM NATURE,

AS MANIFESTED IN

MIND AND MATTER.

BY

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To the Very Reverend FATHER NEWMAN, *D.D.*

MY DEAR DR. NEWMAN,

IT is with a special gladness that I avail myself of your kind permission to dedicate to you, who love the natural world so keenly, the following chapters on Nature considered as one whole whereof rational man forms a part. A tribute of respectful gratitude is indeed due from one so indebted as I am. Among the many obligations I owe to you, is the ability to unite in one the Theistic and the Naturalistic conceptions of the world about us—conceptions a divorce between which is the calamity of our age. To former obligations however you have now added yet another. As an Englishman and a Catholic, I thank you with all my heart for your recent noble vindication of the rights of conscience—a vindication to which reference and appeal will, I am persuaded, be made again and again in the times which are to come. That that voice which so lately stilled the storm may long be spared to speak words of peace and wisdom—disarming prejudice and calming passion—is the most earnest hope and prayer of

Yours most respectfully and affectionately,

ST. GEORGE MIVART.

WILMSHURST, UCKFIELD,
December 8*th*, 1875.

PREFACE.

Observation and experience have convinced me of the narrowing and misleading effects upon the mind of an incomplete conception of what is meant by the term "Nature." It is too generally taken as denoting the assemblage of phenomena external to and apart from the human mind, which none the less is one of the most important objects which presents itself to our perception. Hence arises a necessary imperfection. But a worse evil follows. "Nature," taken in this limited sense, is often made use of to explain that which has been tacitly excluded from it. Thus it is that the facts and processes of Reason are apt to be first ignored in order that they may be afterwards treated as if the mere phenomena of irrational nature were sufficient to explain them.

Impressed with this conviction it has been my endeavour to point out in the following chapters (in however imperfect and fragmentary a manner) what I deem the most important lessons to be derived from "Nature," in the broad sense of that word as a great whole of which the mind of man forms part. For us indeed the facts of mind form the inevitable starting-point from which we must set out in order to study, logically, the phenomena of irrational nature, and to investigate, if we may, their cause and purpose. There is no doubt, in thus proceeding, a danger of Anthropomorphism—of attributing to the First Cause merely human characteristics, and projecting as it were our personality, as in the Brocken shadow, far beyond its proper limits; but the danger of Antanthropomorphism is at present much greater—the danger, that is, of allowing the facts of reason to be obscured and overshadowed by an analogously enlarged distortion of the world of sense, which ever so clamorously reiterates its claims on our attention and regard.

The following chapters are mainly reprints from articles which have from time to time appeared in the 'Quarterly,' 'Dublin,' 'Contemporary,' and 'Fortnightly' Reviews between June 1871 and November 1875. These various articles, however, were originally written with the intention that they should be augmented, re-arranged and republished in an assemblage of consecutive chapters as they now appear.

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LESSONS FROM NATURE.

CHAPTER I.

THE STARTING-POINT.

> "Our own continued existence is a primary truth naturally made known to us with supreme certainty, and this certainty cannot be denied without involving the destruction of all knowledge whatever."

Reasons why the contemplation of nature has become a passion.

THE philosophic contemplation of nature may be said to be a passion of the age in which we live. Nor is the reason why, far to seek. Every physical science, when once its study is fairly begun, never fails to excite much interest, and in our day a certain knowledge of physical science has become widely diffused. Most popular sciences, zoology, botany, and geology, &c., can be followed with ease by all commonly gifted minds, and the beauty, variety, and inexhaustible multitude of the facts and relations they disclose are such as may well make that interest become intense and absorbing. But when it is recollected that to the attraction these sciences possess in themselves there is now added the interest called forth by the generally diffused belief (whether rightly or wrongly entertained) that by these much light may be thrown upon the deepest problems and the most important questions which can occupy men's minds, it becomes easy to understand why a very large part of our popular lectures and of our periodical literature should be devoted to subjects of natural history, so treated as to bear, directly or by implication, upon questions of origin and agency and purpose; devoted, in short, to physical philosophy. The problem of the true relation subsisting between irrational and rational nature is the problem of the day. An endeavour then will here be made to elucidate what are the lessons taught us by a combined study of nature in its two aspects, rational and irrational.

Speculative activity of our age.

It is probable that the last quarter of a century has, in England, seen a more quickly growing and more wide-spread crop of speculative questioning than any former period of like duration. More than this, it is doubtful whether any period of the world's past history has witnessed a more general uncertainty, not only respecting the solution of particular problems, but as to the possibility of satisfactorily and certainly answering any one of them.

Thus it has come about that from increased speculative activity, and the inability of physical science to satisfy the questions raised, men devoted to physical science have been forced into philosophy. "Metaphysics," which had become (especially in this country) a byword of reproach, are again avowedly pursued. A reaction has set in, and the importance of philosophy, indeed its absolute necessity as a basis for science, is made manifest by the most popular teachers of physical knowledge. On the Continent, Buchner, Vogt, Hartmann, and Strauss have powerfully aided in directing popular attention to philosophical problems. In England, in spite of the oft-repeated assertions of the unprogressiveness of metaphysics, and the comparisons drawn between the efforts of metaphysicians and those of Sisyphus, our book-shelves teem with evidence that devotion to philosophy is on the increase amongst us, and physicists such as Carpenter, Bence Jones, Bastian, Huxley, Tyndall, Darwin, Wallace, with many more, have all, in various degrees, wandered beyond the domain which is specially their own into the metaphysical region. Even that annual national congress, which was instituted expressly for the promotion of physical science, had its session of 1872 inaugurated by an address on "the mental processes by which are formed those fundamental conceptions of matter and force, of cause and effect, of law and order, which form the basis of all reasoning;" while, at Belfast, in 1874 it was opened by what may be fitly termed a sermon advocating the deliberate substitution of a religion of emotion for one of reason. Professor Huxley, some years ago,* bore witness to the needfulness of attending "to those philosophical questions which underlie all physical science;" and he has again and again availed himself of his well-earned popularity to press upon his hearers metaphysical considerations, and to endeavour to make plain to them that the questions of really supreme importance are such as are philosophical.

Our need of a starting-point which cannot be gainsaid.

In entering upon an inquiry which professes, as does this, to take nothing for granted unnecessarily or without criticism, we must be careful that our starting-point, in our investigation of nature, shall be thoroughly satisfactory—containing truth which is absolutely unquestionable. Such a starting-point is supplied us by our passing mental states—the facts of consciousness itself. It is conceivable that the whole external world, and all existences external to ourselves, might be delusions, but everybody can see that while we actually have a feeling we must have it, and that no supernatural being could cause us to be thinking that which we at the same time do not think, or not to think anything while we are actually continuing to think it. Here, then, in consciousness itself we have a perfectly satisfactory starting-point, a firm rock which may serve as the corner-stone of a future edifice. Such an edifice we may find it possible to raise by inquiring into the activity of our own mind, by finding what it declares to be ultimate and certain truths (if it declares any to be such), by criticising the tests given as to such truths being certain and ultimate, and by examining the grounds on which we are, if at all, to accept such declarations as true, having, at the same time, seen what truth itself really is.

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* 'Contemporary Review,' November 1871, pp. 443, 444.

This task may appear a difficult and tedious one, but after all it is one which comes strictly within the field of the experimental sciences, and is actually the most certain science of them all. Its inductions repose upon the most direct of observations, and its deductions are tested by experiments of the most decisive kind. Whether "metaphysics" be or be not a cloud-land, this particular inquiry is at least to be made on firm ground, under a clear sky, and in bright sunlight. Before, however, entering upon the first inquiry, a preliminary caution may not be out of place. A widely extended discussion of philosophical questions such as that which now obtains is manifestly open to two dangers, the one, a "hasty dogmatism," the other, an "irrational scepticism." It is common enough to find writers (such, e.g., as Professor Clifford) speaking in so dogmatic a tone that the unwary are in danger of mistaking confident assertion for proof, while the many, ever prone *jurare in verba magistri,* are but too apt to adopt themselves the dogmatic style merely on the authority of their chosen masters. For such, a judicious scepticism is the necessary remedy.

The study of mind an experimental science.

The two dangers of popular discussions.

More common, however, is the danger of "irrational scepticism." And here a word of explanation may be addressed to those who may be offended by this phrase, fancying (in spite of the concluding phrase of the last paragraph) that I may deem "scepticism" to be generally "irrational." But it is manifest that in philosophy, reason, and reason only, is and must be the supreme and ultimate arbiter. For all those who are convinced that truth is necessarily good, it is even wrong to accept anything whatever as true which has not been made evident to the intellect. For such, no authority, however venerable, no consequences, however calamitous, as long as they do not involve a contradiction, can or ought to stand in the way of pitiless logic in following out to their final results the processes of reason. As a consequence, when any man has become a victim to doubt, he has no

Authority has no place in philosophy.

Doubt only to be cured by investigation.

rational choice, as he has no duty, but to reason out his doubts to the end: to seek to escape them by diverting his attention, or to obscure them by calling up a cloud of emotion, is not only useless but blameworthy. As it is for an individual so is it for a people. And if, as in England in the present day, we see a generation restlessly seeking on all sides, in a night of doubt, for the first glimmerings of a coming dawn, surely hearty sympathy and ready aid are called for in favour of men who show by such restlessness and questioning how they are seeking to gain a knowledge of truth which was at least never lost through any act or deed of theirs.

Bewildering effect of the present conflict of opinion.

Now at the present time Englishmen are again and again called upon to treat as open questions the very first principles of all reasoning, fundamental truths upon which the whole fabric of science reposes. And as but a small minority of the lecture-hearing, magazine-reading public can be supposed to have seriously taken up the study of philosophy, it follows that a certain number will fail to distinguish accurately between a healthy and an unhealthy scepticism. Not being accustomed to sound the depths of their own minds, and puzzled by the paradoxes of the sophists who now and again address them, some lose their hold upon all certainty and fall into a state of general doubt which is so undefined that it does not formulate itself in distinct propositions. Hence we too often encounter a vague and hazy scepticism, producing a languid and otiose state of mind which is, indeed, a symptom of incipient intellectual paralysis.

Expediency of stimulating a thorough inquiry.

But since our object is to seek for certain positive truth, and to build up logically on such certain basis, it is needful to rouse attention, as far as may be, to this enfeebling disease—a mental falling-sickness. In the presence of this evil it is surely well to try and drive such loiterers along the philosophic road, and to force on them an earnest and resolute questioning of themselves, so that they may know clearly that they do know what they know, and that they may not be persuaded unawares out of their rational birthright. It is, of course, important that men should not be permitted to build upon a fancied knowledge which has not enough solidity to sustain the philosophical edifice; but it is certainly no less important that men should not be led to follow unsuspectingly an *ignis fatuus* till it plunges them into a quagmire of "universal doubt." To exaggerate our powers is dangerous, but to be possessed by a feeling of our utter impotence is fatal.

The Agnostic philosophy.

Now there is a school of philosophy (by courtesy so called) of considerable popularity, which is called by its opponents the "philosophy of nescience"—a name, however, which its supporters would hardly disclaim. They would hardly disclaim it because some of them willingly style themselves "Agnostics," or "know-nothings;" meaning thereby that they know and can know nothing but appearances, and that nothing whatever can be really and absolutely known. Yet, very irrationally these know-nothings or Agnostics at the same time very confidently affirm that they, by their ignorance, absolutely and infallibly know that the healthy common sense of mankind has gone all wrong, and, what is more extraordinary still, that the greatest philosophers have perversely joined in accepting the common-sense delusions of the vulgar, and gone wrong too. Such philosophers have, indeed, agreed with the rest of mankind in affirming the certainty of their own continued existence and that of their fellow-men, together with an external world, the shape, number, and extent of the parts of which they declare they can really and absolutely know, in so far as such parts can be brought under the observation of their senses.

The Agnostics form a section of that school (including Hamilton, Mansel, Mill, Lewes, Spencer, Huxley, and Bain) which asserts the *relativity*—i.e., the merely phenomenal character—of all our knowledge.

Every philosophy of nescience stultifies itself.

But every philosophy, every system of *knowledge*, must start with the assumption (implied or expressed) that something is really "knowable"—that something is "absolutely true;" and by this Agnostic school it is evidently taught that the doctrine of the "relativity of all our knowledge" is a doctrine which is really and absolutely true. But if nothing that we can know corresponds with reality, if nothing we can assert has a more than relative or phenomenal value, this character must also appertain to the doctrine of the relativity of all our knowledge. Either this system of philosophy itself is relative and phenomenal only, or it is absolutely and objectively true. But it must be merely phenomenal if everything known is merely phenomenal. Its value, then, can be only relative and phenomenal; that is, it has no absolute value, does not correspond with objective reality, and is therefore false. But if it is false that our knowledge is only relative, then some of our knowledge must be absolute; but this negatives the fundamental position of the whole philosophy. Any philosophy, then, which starts with the assertion that all our knowledge is merely phenomenal refutes itself, and is necessarily suicidal. Every assertor of such a philosophy must be in the position of a man who saws across the branch of a tree, on which he actually sits, at a point between himself and the trunk. If he would save himself he must refrain from destroying that which alone sustains him in his elevated position.

Yet is to be directly encountered.

Waiving, however, this objection, it is proposed to examine here some of the assertions of the know-nothing philosophy, with a view of testing the validity of its fundamental assertions and seeing how far some of its so-called "explanations" are really explanatory or instructive. This examination, however, is not undertaken with the barren purpose of refuting an irrational brain-puzzle, but with the hope and intention of bringing out clearly a primary fact of consciousness in its most important bearings, and so establishing a good starting-point for our whole treatise—a foundation revealed to us by the study of nature as it exists in us, in our own mind.

Before, however, consenting to enter the arena with the Agnostics, it will be well to notice shortly three preliminary considerations in order to maintain three propositions, assent to which must be a *sine quâ non* to further discussion, as without such assent discussion would be an aimless and futile waste of time.

On condition of admitting three preliminary propositions.

The first of these considerations relates to "*absolute scepticism;*" and the first proposition is that such scepticism, with every position which necessarily involves it, is to be regarded as an absurdity. The second consideration relates to good faith and economy of time in controversy; and the second proposition is that no position is to be defended which cannot be believed to be really and seriously maintained by some one. The third consideration refers to language; and the third proposition is that what is distinctly and clearly conceived by the mind can be expressed by terms practically adequate to convey such conceptions to other minds.

The first preliminary consideration to be insisted on may be stated thus:—

I. *Absolute scepticism, with every position that necessarily involves it, is to be rejected as an absurdity.*

The first proposition.

The truth contained in this assertion serves to clear away a hinderance which otherwise might at first, and indeed continually, impede our progress. This hinderance consists in a haziness as to the necessary limits of all discussion, hiding the point at which all controversy becomes unmeaning—nay, logically impossible. Before discussing any fundamental questions, the truth that discussion is, as a fact, possible should be clearly recognised, as also that there is such a thing as truth, and that *some* conclusions are true. Without this recognition, whatever conclusions we arrive at may be vitiated by a latent doubt whether any conclusion on any subject can under any circumstances be ever valid. If nothing is certain, if there is no real distinction between truth and falsehood, there can, of course, be no useful discussion. If any man is not certain, *absolutely certain,* that he is not a tree or the rustle of its leaves; if he is not certain that there are such things as thoughts and words, and that the same word can be employed twice with the same meaning, as also that he is the same person when he ends a sentence as he was when he began it, he cannot carry on even a rational monologue; and if he really doubts as to whether an opponent has substantially the same powers of understanding and expression as he has himself—no controversy can be reasonably undertaken. If our life may be a dream within a dream, if we may not be supremely sure that a thing cannot both *be* and *not be*—at the same time and in the same sense—then thinking may indeed be affirmed to be an idle waste of thought, were it not impossible to affirm that anything is or is not anything, and as impossible to affirm such impossibility. Such scepticism is, of course, as practically impossible as it is absurd. Doubt may be expressed as to the validity of all intellectual acts, but any attempt to *defend* the sceptical position thereby actually demonstrates a belief in such validity on the very part of him who would verbally deny it. Familiar as will be these reflections, it seems nevertheless desirable to dwell upon them, that their truth may be clearly brought home. For it follows (and this is an important consequence) that if any premisses logically and necessarily result in such absolute scepticism they may be disproved by a *reductio ad absurdum.* This is so because absolute scepticism cannot be even believed (since to believe it would be *ipso facto* to deny it by asserting the certainty of uncertainty), and is absurd, and no reasoning which necessarily leads to absurdity can be valid in the eyes of those who, not being themselves absolute sceptics, are certain that utter absurdity and absolute truth are not one and the same.

The second preliminary assertion is as follows:—

II. *Propositions are not to be defended which cannot be even conceived to be seriously entertained by some one.*

This assertion serves to discriminate between *real* and *verbal* doubt. There is, of course, nothing which cannot be called in question verbally. The exist- The second proposition.

ence of "self" has been declared to be a thing which may be doubted but not the existence of "thought." It is just as easy, however, to *say*, "I doubt whether thought exists," as to say, "I doubt whether I exist;" but it is as impossible for any one to *believe* that his existence is doubtful as to believe that the existence of thought is doubtful. The limits of rational discussion, then, we must insist, are facts which cannot be *really doubted*—are truths which no one can actually ignore. To attempt to go beyond such limits is to fall into mere puerility and verbiage. Merely verbal doubts are as trifling as endless. We have a right to demand that we should only be challenged by doubts which are really and truly entertained by those who propose them, or are regarded by them as at least possibly real—in fact, that our time should not be taken up by answering the ingenious cavils of merely pretended sceptics. Can we believe that any one of our opponents has any real and serious doubt as to his own true and objective personal existence and his own personal identity? Each may certainly be credited with a total absence of any such absurd dubitation, and this because no one out of Bedlam doubts *really* as to his own being and personal identity, however much he may amuse himself by professing to distrust such declarations of his consciousness and memory. Will any such opponent seriously affirm that he is not certain that he was not last year the Emperor of Russia, or the boiler of the Great Eastern, or that he is not absolutely sure that he has not actually *been* all the various people or things which have from time to time presented themselves to his imagination?

And here perhaps a protest may be permitted against a mode of representing thought which is eminently misleading. Messrs. Mill, Bain, and Herbert Spencer agree in representing that men are only conscious of a succession of *feelings*. Now, *in limine*, an objection may be made to the term "*feeling*" as the one generic name for all states of consciousness. It may be so because the word "feeling" is intimately associated in ordinary language with sensation. Thus to assert or imply that all our states of consciousness are feelings, tends to insinuate a belief that we have no faculty but "sensation." This is not the precise meaning of the above-mentioned writers, but it is a meaning likely to be given to their words by very many, and it is therefore an abuse of language. To say that we have a *feeling* that two sides of a triangle are greater than the third side, is to use the word not only in a non-natural but in a misleading sense.

The third preliminary operation will stand thus:—

III. *Whatever can be distinctly conceived by the mind can be communicated to others by articulate speech.*

The third proposition.

At the end of a controversy with Agnostics they may turn round upon their opponents and deny the validity of any conclusions arrived at on the ground of the inadequacy of articulate speech to express their deepest—their primary—conceptions and convictions. To avoid this denial, it is desirable to point out that unless Agnostics are prepared to admit the validity of "oral words" as used in their discussions and investigations, they should abstain altogether from such discussions. They should so abstain, since, unless the "spoken word" can be made to correspond in a practically sufficient manner with the thoughts conceived, there can be no communication of such thoughts, and every man is bound not to tax the time and attention of hearers or readers by arguments which he knows are necessarily absurd and futile, and by phrases and expressions which he is aware cannot but be empty and unmeaning—a *necessarily* resultless logomachy. It may be confidently affirmed that no sane man really believes that what he distinctly conceives he can in no way articulately convey to others with practical accuracy and sufficiency; but should any men profess to believe in such impotence of verbal expression, then they are clearly bound to abstain from controversy altogether, and not inflict on us expressions of opinion which are in the opinion of their very utterers, necessarily misleading, and verbal judgments which are inevitably false—nay, avowed inanities. Of course it is open to any Agnostic to employ language for the purpose of showing that the use of language leads us inevitably to necessary contradictions; but the effect of such a demonstration, if it could be made, would be not to establish any positive system whatever, but to land us in utter and hopeless scepticism, and to invalidate every argument even of the Agnostic himself. Every writer, then, who professes seriously to dispute concerning metaphysical problems, thereby tacitly avows that his mental conceptions *can* be validly expressed by his spoken (or written) words. He shows by his invitation to discussion, not only that he believes himself to have attained philosophical conceptions which seem to him sound and true, but also that he believes himself capable of conveying those truths, by language, to the apprehensions of his fellow-men—since any one who invites to any inquiry is bound to have first satisfied himself that such inquiry can in fact be made. An *argumentum ad hominem* may then be well addressed to any Agnostic who objects to his own refutation on the ground of the necessary inadequacy of language.

The teaching of a leading Agnostic as to our knowledge of our own existence.

Having, then, noticed these three preliminary considerations, we may proceed to test some of the utterances of prominent leaders of the philosophy of nescience on a point of the highest importance to us, namely, our own existence. Professor Huxley not long ago * expressed himself as follows:—"Now, is our knowledge of anything we know or feel, more or less than a knowledge of states of consciousness? And our whole life is made up of such states. Some of these states we refer to a cause we call 'self;' others to a cause or causes which may be comprehended under the title 'not-self.' But neither of the existence of 'self,' nor of that of 'not-self,' have we, or can we by any possibility have, any such unquestionable and immediate certainty as we have of the states of consciousness which we consider to be their effects." They are "hypothetical assumptions which cannot be proved or known with the highest degree of certainty which is given by immediate consciousness."

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* 'Lay Sermons,' Descartes, p. 359.

Now it may, in the first place, be contended that the process of analysis is incomplete. It may be denied altogether that in the primary direct act of consciousness we recognise the truth of the existence of the "state" one bit more than of the "self." Professor Huxley fails to discriminate between the "self" as recognised deliberately by reflection, and the "self" as directly perceived in the momentary act of consciousness. The "self" indeed, the substantial continuous being as deliberately perceived, is only explicitly recognised by *reflection*, and in so far as he may mean this, Professor Huxley is right. But the "Ego" of each instant is given by consciousness simultaneously with its "state," and just as vividly. If, therefore, the "continuous self" is thus admitted to be secondary, nothing is thereby conceded. For though the continuous substantial "self" is not given in the momentary act of consciousness *explicitly*, it is there *implicitly*.

His analysis incomplete.

Our immediate direct consciousness is neither the act of judgment, "mental state exists," nor the judgment, "self exists;" but is the simple apprehension of self-action, or (self + state), and both "self" and "state" require reflection for their EXPLICIT recognition. To say that the explicit recognition of the existence of the "state" is prior to or more certain than the explicit recognition of the existence of the "Ego" is false *in fact*, and contradicts the affirmations of our own consciousness.

But not only does Professor Huxley fail to reach the true dicta of consciousness, he also fails entirely in his endeavour to construct an intelligible statement of primary truth, even according to his own conceptions. As will, it is believed, shortly appear, instead of presenting us with a more intelligible system than that traditionally taught us, he ends by presenting for our acceptance what is strictly and absolutely non-sense. He appears to consider he has done away with baseless philosophical

His system can be destroyed by his own weapons.

dogmas, and substituted for them an exposition of simple truth; but, in fact, he presents us with dogmas of his own fully as mysterious as any he conceives he has destroyed. The old system, baseless or not, threw light upon the facts of psychology, of which it afforded an intelligible explanation. Professor Huxley's dogmas are not only, to say the least, as open to attack, but, if admitted, fail to be of any service in interpreting or making intelligible to us the phenomena presented to us by our own intellectual activity.

Mr. John Stuart Mill admits* the existence of the mind in the form of a "thread of consciousness," "aware of itself as past and future," and possessing a conviction of the simultaneous existence of other "threads of consciousness" and of numerous "permanent possibilities of sensation."

Professor Huxley seems to agree with the last-named writer as to the certainty of the existence of a series of states of consciousness.

It seems, however, that the proposition which Professor Huxley affirms is to the full as assailable as the position which the Professor attacks. He appears to think he has entrenched himself behind bulwarks impregnable against the assaults of others still more sceptical than he is himself. His ultimate citadel is not, however, a bit more tenable by its defenders than the fortresses which they profess to have reduced. If we may legitimately call in question the existence of "self" and "not-self"—to say nothing of mind, matter, and a real external world—then the very same weapons which are believed to have been successfully employed to demolish the necessary objective validity of those conceptions, may be employed with not less force to shatter this last refuge of "philosophical dogmatism." For what is the meaning of the proposition, the truth of which all these writers agree in regarding as unquestionable?—"a series of states of consciousness exists."

Before examining this proposition as a whole, let us

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* 'Mill upon Hamilton,' p. 212.

As considered in its parts.

consider its several parts. Writers of the school we combat —the Agnostics—are exceedingly apt quietly to slip into the terms of a proposition those very conceptions and beliefs the validity of which they deny. Let us, then, see what is the meaning of the expressions, "a series," "states of consciousness," and "exists."

1. A "series" means a succession of entities, in time or space; but consciousness is of the *present.*[*] Let us be ever so persuaded of the existence of a past series of events, all that consciousness can by any possibility tell us is that we have *now* such persuasion, and this persuasion—for all consciousness by itself can vouch—may be the merest delusion. But, again, "succession" implies "permanence." It is a relation of which permanence is a necessary term. Things cannot *succeed* except by relation to something which *endures.* Much, therefore, is implied in the mere exclamation, "a series!" without the conception of, and a belief in, more than momentary "states of consciousness," this very first term of the proposition is without meaning.

2. "States of consciousness!" What can be the meaning of this undecipherable hieroglyphic—for such it is if we may employ nothing but direct states of consciousness to unravel it? How can a "state" be conscious of itself? It cannot, for by so doing, it *ipso facto* becomes another state. We may ask Nescients what they can mean on their hypothesis, even by the naked term "consciousness" itself, *à fortiori,* by what right they assume the actual being of this abstract entity, and attribute to it an existence both

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[*] Mr. Herbert Spencer denies that consciousness is of the actual present, but of the moment just passed. This contradicts at least what my own mind tells me, when I concentrate my attention on any object. However, conceding the truth of Mr. Spencer's dictum, my argument is equally valid, for without question if consciousness is not of the actual present, it is of such an immediate past as to persuade most persons that it is of the actual present. But Mr. H. Spencer's position, far from weakening my general argument as to the conscious endurance of the Ego, strengthens it. For if each state is passed before it is recognised, then *à fortiori* the Ego must persist, and have the power of certainly knowing that of which it is not immediately conscious, or how could it ever recognise the various states as belonging to it, and say with perfect certainty, "now I am thinking?"

capable of modification and actually modified. We must surely go outside of mere direct states of consciousness—we must assume the existence of the substantial self, in order to be able to give any sort of intelligible meaning to this second term of the proposition.

3. "Exists!" Finally, let us consider this last word of the proposition. It asserts the existence of something, and necessarily implies a judgment as to that something by a mind which perceives such existence. The necessity of these implied relations is just as certain as is that of the existence predicated, whatever it may be.

And considered as a whole.

But if difficulties arise even with regard to the component members of the proposition, "a series of states of consciousness exists," what shall we say to that judgment as a whole? Surely no metaphysical formula was ever more open to objection.

How can "a series" be conscious of itself as a series?* The proposition is absolute "non-sense." A state of consciousness is a state of consciousness, and no more. *We*, indeed, may be aware of our own past states, but such states cannot themselves be conscious, for direct consciousness is of the present, or if of the immediate past, then only through and by means of a persistent, enduring Ego. The writers named, therefore, are guilty of what, on their principles, is an utterly unjustifiable dogmatism in asserting that a series of states of consciousness exists. All they can be justified in individually asserting is "thought exists;" but no jot or tittle will pitiless logic allow them to proceed beyond this without falling into the most flagrant *petitio principii*, passing into a transcendentalism of their own, and a positive superstition. Though each one may assert "thought exists," he is unable to affirm thought existed. All he can be warranted in saying is, "a thought exists of a past thought having existed;" but no guarantee can be devised for the truth of such thoughts, except upon principles the validity of which the writers referred to deny. "Self" and "not-self," therefore, do not fall alone, but with them every train of thought and every process of reasoning, for no one thought can guarantee the *existence* of a process of reasoning, still less its validity. Thus absolute scepticism is the logical and inevitable fate of all professing Agnosticism, unless they abandon their untenable and anti-rational principles. It may, however, be said that certainty is not denied as to the existence of "self," but only "the highest degree of certainty."

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* Mr. Mill fully admits this difficulty. See his work on 'Hamilton,' p. 213.

Professor Huxley tells us this certainty is *not* of "the highest degree," inasmuch as it is not "given" to us by "immediate consciousness." Something, however, may be said in direct contradiction to this, and in support of the assertion that though both the existence of "a state of consciousness" and the existence of "self" are known with complete certainty, yet that the existence of self is known primarily, and therefore with a higher degree of certainty. Both are, indeed, directly perceived by the mind implicitly in the cognition "thinking self;" both are explicitly recognised only by a reflex act. Nevertheless, the "self" can be known in the order of reflection purely as an existing entity; but "a state of consciousness" cannot be known in that order but as appertaining to some existing mind, which, in the metaphysical order, is primary to it. The primary act of reflex knowledge reveals "self" to us, whereas the reflex recognition of "mental states" shows them to us as states and modifications of the yet more primarily (in the reflex order) and thoroughly known "self." I therefore join issue with Professor Huxley, and affirm the direct contradictory to his assertions. I maintain that we know ourselves with supreme certainty, and that we know our several mental modifications (though we know them with certainty) with a certainty which is subordinate and secondary in degree. But waiving this reply, it may be affirmed that if so much certainty be allowed as to eliminate all doubt, and to rationally require unhesitating acquiescence on our part in all we do and say and think, all is conceded

Self-existence known primarily.

which we need demand. Now, whatever be its validity, certainty as a fact exists, and no fact is a more sure one for each of us than that of his own continued personal identity. No conviction is more constantly and uniformly acted on by us. As full and complete a practical acquiescence is given to the conception, "self exists," as to the belief that "a series of states of consciousness exists;" and were any one to refuse this practical acquiescence, then, unable to act, discourse, or reason, he would be shut up in his sterile and solitary direct thought.

Self-existence implied in "certainty" itself.

But what is this certainty of which they speak? Is it itself a thought? And if so, what does one thought know about another thought? and which thought of the two is it which has the knowledge? Thoughts are not permanent, but progressive. To say that thought exists is itself a figure of speech. It really means, "something exists which thinks." To know is not to *be* knowledge, but to acquire and possess it. *To have* implies two factors, not one alone. Certainty, again, without an "I" who is certain, is as impossible as doubt without a doubter.

The refutation of Nescience not to be evaded on the ground of the inadequacy of language.

As before observed, however, it will perhaps be rejoined that all the foregoing objections to Agnosticism are only possible on account of the exigencies of language; and though it is impossible for advocates of nescience to enunciate verbally their principles, yet that these principles are none the less true for all that, and that it is grammar, and not reality and reason, which reduces them to this impotence. To this it may be once more replied that the spoken word is but the expression of the mental concept; and that there is nothing which can be clearly and distinctly perceived which cannot be articulately expressed and conveyed to other minds by language good and sufficient for the purposes to which it is applied. What was said in the opening of this paper, however, demonstrates to what this objection amounts. It amounts simply to the assertion that fundamental truth is what can neither be conceived by the mind nor expressed by words, and consequently that everything on this subject which can be either said or thought is necessarily and inevitably fundamentally untrue. In other words, Nescients are thus again reduced to absolute scepticism by another road; and, indeed, that inevitable gulf yawns to receive them by whatever path they seek to escape from their position, save and except that one road which they refuse to follow, and to follow which is to vindicate the truth and validity of human reason. Thus I venture to think the real scope and meaning of the philosophy of nescience may be made plain. Denying the necessary validity and objective truth of our cognitions of "self" and "not-self," Nescients may logically be reduced to one present thought, and rendered incapable, logically, of attack or defence, uncertain whether reason and memory may not be the most baseless of chimeras, their whole life "a dream within a dream," or even their very consciousness the sport of a deceptive and malignant demon. Such indeed is, I venture to believe, the necessary ultimate outcome of the philosophy of all those who, following the example of Descartes, abandon the high road of philosophy, properly so called, for the lonely by-paths of individual eccentricity. Let them grant, on the other hand, that our spontaneous belief in our own existence is the perception of a real, objective truth, which is made evident to our minds by its own intrinsic light, and the silly cavils which "common sense" justly despises are at once annihilated.

The value, then, of the nescient philosophic doubts, as put forth by Professor Huxley and his school, may, I venture to think, be shown to be *nil*—first, because they are not real doubts, but merely verbal ones; and, secondly, because they contradict the primary and fundamental dicta of consciousness itself.

Something further, however, may yet be urged.

Even what is called "necessary truth" is, in fact, conceded by some Agnostics;* and they would generally admit that

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* It admits of "*no doubt* that *all our knowledge* is a knowledge of states of consciousness."—Professor Huxley: 'Lay Sermons,' p. 375.

A further consequence.

to each one who thinks, while he thinks, the proposition "thought is," is a necessary truth. I maintain, however, that this proposition can be proved to carry with it (if it is to have any *meaning*) a store of objective truth, amply sufficient to establish the validity of all first truths. I further maintain that it is impossible *intelligently* to utter the monosyllable "thought" without thereby laying implicitly the foundations of the whole of philosophy, a whole system of universal and necessary truth.

What the word "thought" implies.

For the word "thought," intelligently uttered, must at the very least contain the conception of "existence," and involve a psychological judgment which, explicity evolved, is the judgment "thought is." But a "judgment" has no meaning without both a "subject" and an "object," and the first of these two words is meaningless without the conception of an "Ego" and "its states," and the term "object" necessarily carries with it the conception of the "non-Ego—actual or possible." Again, the exclamation "thought," since it necessarily involves the conception of existence or being, carries with it, by necessary correlation, the conception "not being;" and this, again, necessarily involves "relation" and the principle of contradiction, and therefore the idea "truth;" and "truth" is meaningless, unless we accept the co-existence of "objective being" and "an intellect," together with a relation of conformity between the two. For "truth" is nothing else but a relation of conformity between some existence and some being that knows such existence. To say that anything is true, as, e.g., that "Mr. Disraeli is our Prime Minister," is to assert a conformity between the mental judgment so expressed and the really existing external facts signified by that proposition.

What "truth" is

Quite lately * indeed truth has been defined as "the equivalence of the terms of a proposition," but this definition seems a defective one. When a proposition is declared to be true, it is not its "terms" only which are referred to, but what those terms denote, and the conformity existing between the interrelations of the things so denoted as they actually exist externally and the mental judgment verbally expressed respecting them. If reference is not expressly made to the truth of a true proposition, its truth none the less consists in that conformity, and reposes not on the "terms" but the objective realities they denote. There is no equivalence between the *terms* "Mr. Disraeli" and "England's Prime Minister," and there is no truth between "London Bridge" and "a way across the river Thames." There is, however, equivalence in what is denoted by the terms, and there is truth in the proposition, "London Bridge is a way across the river Thames:" that is to say, the objective facts conform to the mental judgment so expressed concerning them—in other words, in the relation between objective existences and the intellect.

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* See Lewes's 'Problems of Life and Mind,' vol. ii. p. 88.

"Necessary" truth.

To return, however, to our argument: every Nescient will admit that the real existence of a present actual state of consciousness is an absolute and necessary truth to that consciousness; so much so, that no malevolent being, however powerful, *could* in this deceive. Were our existence made up of a succession of shifting deceits, yet that a thought or feeling exists at the moment we actually experience its existence, is what, by universal consent, is beyond question. That "a state of consciousness is," is therefore a "necessary truth." But as to "truth," we have just seen its implications; and with regard to the word "necessary," it can have no meaning, except we apprehend "causation," together with "possibility" and "impossibility," revealing to us a difference between actual being and merely possible being, as also between the necessary and contingent categories of actual being.

The Agnostics' assertion if valid implies many truths they deny.

If, then, the above proposition, "a state of consciousness is," is necessarily true, it follows that a whole world of necessary truth is thereby and therein implied. If, on the contrary, it be asserted that these implications, or any of them, are untrue or invalid—not *objectively* true—then the proposition is unmeaning, and we can *not* affirm that a demon could not deceive us as to the existence of a passing thought. If however we cannot so affirm, then the Agnostics are wrong (for they, the Agnostics, say that to this extent there is certainty), and we are landed in *utter* scepticism. If they choose the other horn of the dilemma, and assert the necessary impotence of thought or of language, then, as we have seen, they thereby assert that everything which can be thought or said is necessarily uncertain; and this, again, implies *certainty;* so that the Agnostics are inextricably inclosed in a vicious circle. They cannot even speak interrogatively; they cannot say, "How do you know that thought is not self-existent?" for the use or implication of one personal pronoun *ipso facto* removes them from their own chosen position, and lands them in that world of objectivity and reality they would so insanely and so inconsequently disown.

Logical consequences.

We come now to the last matter which it is here suggested should be pressed upon Agnostics. It is the result and outcome of the foregoing observations—namely, that they (the Agnostics) are logically driven to admit and accept the following affirmation, under pain of utter scepticism:—

That our persuasion and spontaneous belief as to the existence of a continuously enduring self underlying the changing series of phenomena we term "states of consciousness" are valid, and the results of a true perception of our own objective existence. We are forced to admit that the thinking being I call myself at this moment is substantially one and identical with the agent who carried on the long series of acts and endurances I call my past life. We are driven to affirm that we have indeed a direct intuition of passing modifications, but that we have a no less clear, no less certain intuition of a mysterious, substantial unity, which reason tells us, if we can be certain of anything, is due to a peculiar faculty of perceiving truth, which faculty we term the intellect. I say "of perceiving truth," for if what is perceived as necessarily true (not merely passively unthinkable) is *not* truth, then there is no truth at all for us, and we must fall into "absolute scepticism," where all intellectual conflict becomes an absurdity. If we may make any affirmation whatever, it is the affirmation of our own existence, and yet that cannot be made without accepting the trustworthiness of memory. But what do we not admit in admitting so much?

It is in vain that we try to get rid of the mysterious. Mr. Herbert Spencer himself is quite unable to get rid of "mystery." He says,* there is "a warrant higher than that which any argument can give, for asserting an objective existence. *Mysterious* as seems the consciousness of something which is yet out of consciousness, he finds that he alleges the reality of this something in virtue of the ultimate law—he is obliged to think it."

A curious fallacy.

Speaking on this subject, Professor Huxley has fallen into one of the strangest fallacies it has been our lot to encounter. He says† that the "general trustworthiness of memory" and "the general constancy of the order of nature" "are of the highest practical value, inasmuch as the conclusions logically drawn from them are always *verified by experience!*" As if experience itself was possible, unless memory could be relied on as trustworthy. My "experience" would be of little value to me if I could not be certain it was mine, and not that of somebody else. As to this fallacy, a writer in the 'Dublin Review' observes:—‡

> "To this singular piece of reasoning we put forth (p. 46) an obvious reply. You tell us that you trust your present act of memory, because in innumerable past instances the avouchments of memory have been true. How do you know—how can you even guess—that there has been *one* such instance? Because you trust your present act of memory; no other answer can possibly be given. Never was there so audacious an instance of arguing in a circle. You know forsooth that your present act of memory can be trusted, because in innumerable past instances the avouchment of memory has been true; and you

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* 'Essays' (stereotyped edition), vol. ii. p. 407.

† 'Lay Sermons,' p. 359.

‡ See in 'Dublin Review,' July 1873, the article on Mr. Mill's reply to the 'Dublin Review.'

know that in innumerable past instances the avouchment of memory has been true, because you trust your present act of memory. The blind man leads the blind round a 'circle' incurably 'vicious.'

"Let us observe the Professor's philosophical position. It is his principle, that men know nothing with certitude, except their present consciousness. Now, on this principle, it is just as absurd to say that the facts testified by memory are *probably*, as that they are *certainly* true. What can be more violently unscientific, we asked (p. 50, note)—from the stand-point of experimental science—than to assume without grounds as ever so faintly *probable* the very singular proposition, that mental phenomena (by some entirely unknown law) have proceeded in such a fashion, that my clear *impression* of the past corresponds with my past *experience?* Professor Huxley possesses no doubt signal ability in his own line; but surely as a metaphysician he exhibits a sorry spectacle. He busies himself in his latter capacity with diligently overthrowing the only principle on which his researches as a physicist can have value or even meaning."

What is implied in asserting the trustworthiness of memory.

The trustworthiness of memory is as mysterious and exacting a dogma as the trustworthiness of our perceptions of universally necessary objective truth—nay, it is as mysterious as any of the dogmas which the objectivist philosophy enunciates, and yet without admitting this trustworthiness we cannot advance one step. By admitting it, we allow to our intellect the faculty of perceiving objective existence, of which the senses can give no account, and which is altogether removed from the field of sensible experience. If we admit the validity of such cognitions, on what ground are we to deny the validity of other intellectual cognitions which are no less an object of certainty? If the mind has the power *now* of cognizing acts performed by it, but removed by half a century's interval from the domain of present experience, why may it not perceive the* necessary properties of all possible triangles, though experience can give us cognizance of but a few actual triangles?

Here, then, we may firmly take our stand, and assert that the intellect shows us its own objective validity. Let him who denies it beware; for the denial of any certainty as to his own existence follows logically and necessarily from such negation, and thus fails all certainty whatever, even the certainty that there is no certainty, or that the words certainty and uncertainty have any difference of signification, or that any words have any meaning, or that meaning or being of any kind can exist, or even be really thought.

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* Mr. Herbert Spencer himself well observes: "Is it, then, that the trustworthiness of memory is less open to doubt than the immediate consciousness that the quantities must be unequal if they differ from a third quantity in unequal degrees?"—'Essays' (stereotyped edition), vol. ii. p. 411.

Mr. Spencer's view as to our knowledge of our own existence.

Reference has been just above made to Mr. Herbert Spencer, and as he has a different but more important band of philosophical disciples than has Professor Huxley, and as Mr. Darwin has bestowed on him the title "our great philosopher," it would be interesting to learn precisely his view concerning our knowledge of our own existence.

Unfortunately, Mr. Spencer is hardly clear in his enunciations respecting our knowledge of our own continued personal existence.

In his chapter on "The Substance of Mind" * he remarks:—"If by the phrase 'substance of mind' is to be understood mind as qualitatively differentiated in each portion that is separable by introspection but seems homogeneous and undecomposable; then we do know something about the substance of Mind, and may eventually know more. Assuming† an underlying something, it is possible in some cases to see, and in the rest to conceive, how these multitudinous modifications of it arise. But if the phrase is taken to mean the underlying something of which these distinguishable portions are formed, or of which they are modifications; then we know nothing about it, and never can know anything about it."

He asserts a truism or an absurdity.

Now, if by this Mr. Spencer means we cannot know our own soul otherwise than in and by its acts, he only asserts what has been ever taught by the schools to which he is most opposed. No rational metaphysician ever

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* 'Psychology,' vol. i. p. 145.

† It may be well asked, on what ground shall we make this assumption? Unless he grants a self-consciousness, which he does not grant, such an assumption will be both groundless and unverifiable.

taught that the soul could be known by us in its essence or otherwise than by its acts.

But if by the passage quoted he would deny that we have direct consciousness of an enduring and persistent self, known to us by its acts as the author of our volitions and the subject of our feelings and cognitions, then we might equally deny that Mr. Spencer has, or ever can have, any knowledge of any friend as, e.g., Professor Tyndall.

An illustration.

If by Professor Tyndall is to be understood a plexus of sensible accidents—an entity "qualitatively differentiated in each portion that is separable by thought"—then Mr. Spencer may "know something" about Professor Tyndall, "and may eventually know more." But if the name is taken to mean the underlying something which is now speaking, now silent, now in the Alps, now at the Royal Institution, at one time a boy, at another a man, which has a certain expression of face, a certain habit of dress, a certain mode of carriage, a certain cast of thought—then Mr. Spencer knows "nothing about it, and never can know anything about it:" since he can never know his friend but by and through some act, were it only by action on the retina of Mr. Spencer, or by some active impressions on his auditory nerves.

An *argumentum ad hominem.*

But we have said Mr. Spencer is hardly clear in this matter, and we may add, he is hardly consistent. He is not consistent; because if there is one prominent feature of his teaching, it is the supreme certainty borne in on us of the existence of what he calls the absolute and unmodified "unknowable."

Yet all that Mr. Spencer brings against our consciousness of the Ego may be brought against his unknowable. If everything that we know is a form of the unknowable, then the unknowable is modified, and the absolute or unmodified unknowable is an absurdity.

Similarly, that we cannot know the Ego except as qualitatively differentiated is most true, but it is true for the very simple reason that it never *exists* except in some state. A qualitatively undifferentiated Ego is a pure absurdity and an impossibility. No wonder, then, our intellects do not apprehend it.

What he asserts implies the existence of what he denies.

He tells us that the substance of mind cannot possibly be known, because since "every state of mind is some modification of this substance of mind," in no state of mind can the substance of mind be present unmodified. But this does not prove that the continuance of mind is unknowable, but only that it is not knowable except in its modifications.

Mr. Spencer talks of states of mind known as "states of mind," or "modifications of mind." But there cannot be a consciousness of difference without a comparison, and two things cannot be compared if one is unknown and unknowable. Therefore these "states" and "modifications" can only be known as such by comparison with a "persistent substance" of mind, and therefore this must be known in order that we may know "stetes of mind" as "states of mind."

But an attempt to deny our knowledge of the substantial Ego, without at the same time implicitly asserting that knowledge, is really an effort to escape self-consciousness, which can be but very inadequately represented by the conception of a man trying to jump away from his own shadow.

Conclusion arrived at.

We may then conclude that in affirming our certain knowledge of our own continued existence we hold a position we can maintain against all assailants. We have in that certainty a starting-point of knowledge such as we set out to seek, namely, one that is thoroughly satisfactory. If indeed we have not with respect to that self-existence the highest degree of certainty, then the intellect is deprived of any firm foundation whereon to raise a rational system of co-ordinated knowledge. But it is hoped that the cavils of the Agnostics have been here met by arguments sufficient to enable even the most timid and deferential readers and hearers of our modern Sophists to hold their own rational convictions, and to maintain they know what they are convinced they do know, and not to give up a certain and absolute truth (their intellectual birthright) at the bidding of those who would illogically make use of such negation as a ground for affirming the relativity of all our knowledge, and consequently for denying all such truths as, for whatever reason, they may desire to deny.

The first lesson from nature.

Such, then, is the first lesson we may draw from the investigation of nature as revealed to us in and by our own minds. Our continued personal existence is a certainty absolute and irresistible, directly known to us as a particular contingent fact by means of consciousness itself. Our supreme certainty of this truth has, as we have seen, been denied on grounds which, it is here contended, plainly show a want of accurate analysis and of careful introspection on the part of the deniers. Their denial, however, serves to bring out still more clearly the supreme importance of our recognition of our own self-consciousness, and of all that our knowledge of the Ego implies and contains. Each man who for the first time has his eyes thus opened to the marvellous nature of his present knowledge of his own past existence will see in this necessarily postulated "veracity of memory" the evidence of his possession of real objective truth and of knowledge other than phenomenal. That is to say, he will see that his own mind has the power (however acquired and however mysterious) of penetrating beyond the appearances of things, beyond mere feelings, and the constant changes of nature, and of attaining a direct knowledge of a persistent and real being—namely, himself, as both past and present—learning through his passing states and feelings the fact of his own persistent and enduring being. We may now seek to learn whether this first lesson taught us by nature can aid towards the acquirement of further certainty.

CHAPTER II.

FIRST TRUTHS.

> **"Knowledge must be based on the study of mental facts and on undemonstrable truths which declare their own absolute certainty, and are seen by the mind to be positively and necessarily true."**

Self-knowledge shows we can have absolute certainty without proof.

THE first lesson we have gathered from nature, one which is certain and indisputable, is the fact of our own continued personal existence revealed to us by consciousness and by memory. This certainty, though absolute, rests upon an immediately known fact, and not upon evidence; neither is it capable of proof, being above and beyond all proof of whatever kind. It is thus manifest that we may have absolute certainty without proof, and a moment's reflection suffices to show that there must be truths of this order—truths as certain as they are undemonstrable. For demonstration can but proceed by proving some propositions by the help of others which will not be denied; and this process, unless it is to go on for ever, must stop at truths which can be at once seen to be self-evident and indisputable. If no such truths can possibly be found, then the mind can have no secure basis whatever upon which to rear a fabric of reasoned and coherent truth.

Reasons why we should begin with a study of mind before studying external nature.

And here it might be expected that in gathering lessons from nature our course should be to start from a consideration of external objects, proceeding from the lower and more simple to the higher and more complex, till we reach, at last, the highest nature which our senses make known to us, namely, our own. It might be expected that, in our study of life, we should ascend from a consideration of mere nutrition, growth, and reproduction, through locomotion and feeling, up to the most abstract intellectual action, according to the great example left us by Aristotle.

To begin with the external world would also be the more reasonable and consistent course, seeing that with each of us, as we develop from earliest infancy, the external becomes noticed by us before the internal, and the consideration of surrounding objects takes up a much larger part of our mental activity than self-contemplation. And such an objective ascending course would indeed be the one here followed were it not for the various cavils against human intelligence which prevail amongst us to-day. But when idealists deny the existence of an external world at all; when sensists proclaim our highest thoughts to be but transformed sensations; when the assertors of absolute identity declare both self and not-self to be modes of an unknowable entity, which is neither, yet both—under these conditions our treatment must be modified accordingly. To follow the more natural method would now be to fall into a *petitio principii.* For it has become necessary first to justify our judgments concerning our perceptions and our reasonings, and only after this can we logically proceed to investigate the world of objective being around us. As long as the objective validity of subjective conceptions is in dispute, objective truths must not appear first in the field. In a controversy in which "states of consciousness" have become the ultimate criterion, it would be a mistake to begin with considering facts of anatomy and physiology. I fully agree, then, with Mr. Spencer when he says that the metaphysician's first step must be to exclude from his investigation everything objective; not taking for granted the existence of anything external corresponding to his ideas, until he has ascertained what it is he predicates in calling his ideas true.

It seems plain that our first duty here is to settle, if we may, an ultimate criterion on a subjective basis, and by means of it to endeavour to show what must necessarily be postulated if we would rise above utter scepticism.

We have therefore taken immediate consciousness as our fundamental fact—as that which is to form, and must form, part of that foundation on which alone any durable philosophic edifice can now be raised.

Next to the fact of our own continued personal existence, our attention may be recalled and directed to the certainty that we not only exist, but that we both *think* and *feel*—that we have a faculty both of thinking and feeling. These truths are unquestionable—whatever cavils may be made as to the world external to our own minds.

And endeavour to harmonise our thoughts and feelings.

If our thoughts and feelings can be so coadjusted as to result in order and harmony, if they can be arranged in an orderly and reciprocally supporting collocation, we thereby attain to a stable system of philosophy. And that system of philosophy must be the best which harmonises the whole universe of facts with least strain and most stability.

If contradiction and discord necessarily result from every attempt at such coadjustment, if our mental activity cannot but end in contradictions, then we have no possible refuge from utter scepticism.

But these two entities of which we are conscious, "thoughts" and "feelings," may be seen by introspection to have a very different range. Our feelings, of course, as present feelings, are infallible, but they refer only to what we deem present here and now, or to the recent past. Our thoughts, on the other hand, can range over all conceivable time and space, and with equal infallibility affirm such propositions as, e.g., that always and everywhere "the whole is greater than its part," "whatever thinks, exists." Moreover, looking into our own minds shows us that thought exercised about feelings does not attain to the same degree of certainty and conviction which it can attain to when exercised about certain other thoughts. We see that there may be possible sources of error. Thus, e.g., when we say, "I see that chair," we have

Some differences between these.

an internal mental state of conviction, but one less forcible and certain, than the mental state of conviction we have when we say, "whatever thinks, exists."

Again, looking into our own mind shows us the strange power it has of seeing a necessary universality in a single experience. Let the three angles of any triangle be once clearly understood to be equal to two right angles, and we also see immediately that in all space, such as the space we know, the three angles within any possible figure bounded by three straight lines must also be equal to two right angles.

Thought, not feeling, the test of truth.

Mr. Lewes indeed tells us [*] that: "Ideas can be valid only as representatives of sensations;" and from a certain point of view this is true, since all our ideas arise through and by means of sensations. But there are ideas which are not and never were representatives of sensation, but of what is or has been suggested to our intellect by means of sensations. Such ideas are, e.g., those of substance, ratio, cause, &c. These ideas when expressed by us in words are deemed and believed, through what we take to be experience, to be capable of suggesting to others these similar supra-sensible cognitions, and we think (assuming men like ourselves to exist) that if any one denies this he is not as other men are.

Mr. Lewes adds: [†] "All sensation is certain, indisputable. The test and measure of certitude is therefore sensation." Now this is bad logic; such a conclusion would follow only if *nothing* was certain *but* sensation. All he can logically conclude is that sensation is "*a* test and measure of certitude." In one sense it is such a test—not *the* test. Moreover, it is a test used by the *intellect*. In feeling itself there is neither certainty nor doubt; these are the attributes of "thought" only. To say that certitude is in even any one case to be tested by sensation is an incomplete and misleading expression.

Certainty, we see by introspection, does not exist at all in *feelings*, any more than doubt. Both belong to thought only.

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[*] 'Problems of Life and Mind,' vol. i. p. 181.

[†] *Op. cit.* p. 257.

"Feelings" are but the materials of certainty, and though we can be perfectly certain about our feelings, that certainty belongs to thought, and to thought only. Thought, therefore, is our ultimate and absolute criterion, that to which we can alone appeal. It is by self-conscious thought only that we *know* we have any feelings at all. Without thought, indeed, we might feel, but we could not know that we felt, or know ourselves as feeling.

We have then self-consciousness and thought, called into action through sensation, from which to build up, as we may, our fabric of knowledge, and these faculties, as we shall shortly see, imply much more, and in fact suffice by themselves to carry us out from our internal world of thought into an external universe of real existence. Indeed, our subjective knowledge of our own past existence, which is to us now an objective fact, suffices to enable us at once to cross the bridge (provided for us by nature) spanning the bottomless abyss separating subjectivity from objectivity; separating, that is, the world of existence outside our consciousness from the world of our conscious existence.

But it is time to return to the question of first truths, and to the question respecting the ultimate foundation of philosophy and the true basis of certitude, and the necessity of our intellect finding and possessing undemonstrated and undemonstrable certainties by which all other truths may be proved, if truth is to exist for us at all.

Balmes and Mr. Herbert Spencer as to the necessity of starting with undemonstrable truths.

Balmes[*] has well said: "Not only are not all things demonstrated, but it may even be demonstrated that some things are undemonstrable. Demonstration is a ratiocination, in which we infer from evident propositions a proposition evidently connected with them. If the premisses are of themselves evident, they do not admit of demonstration; if we suppose them in their turn demonstrable, we shall have the same difficulty with respect to those on which the new demonstration is founded; therefore we must either stop at an indemonstrable point, or proceed to infinity, which would be never to finish the demonstration."

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[*] 'Fundamental Philosophy' (translated by Brownson), vol. i. p. 106.

Although, to be perfectly consistent, Mr. Spencer ought to deny the existence of any basis of certitude, or of any absolute and fundamental truth, yet, by a happy inconsistency, he lays down the necessity of primary undemonstrable truths underlying the whole fabric of knowledge.

I cite with pleasure the following statements, which seem as true and valid as they are admirably expressed. In criticising 'Empiricism' or 'Experientialism,' he says:—*

> "Throughout its argument there runs the tacit assumption that there may be a philosophy in which nothing is asserted but what is proved. It proposes to admit into the coherent fabric of its conclusions, no conclusion that is incapable of being established by evidence; and thus it takes for granted that not only may all derivative truths be proved, but also that proof may be given of the truths from which they are derived, down to the very deepest. The consequence of this refusal to recognise some fundamental unproved truth is that its fabric of conclusions is left without a base. Giving proof of any special proposition, is assimilating it to some class of propositions known to be true. If any doubt arises respecting the general proposition cited in justification of this special proposition, the course is to show that this general proposition is deducible from a proposition of still greater generality; and if pressed for proof of such still more general proposition, the only resource is to repeat the process. Is this process endless? If so, nothing can be proved—the whole series of propositions depends on some unassignable proposition. Has the process an end? If so, there must eventually be reached a widest proposition—one which cannot be justified by showing that it is included by any wider—one which cannot be proved. Or to put the argument otherwise:—Every inference depends on premises; every premise, if it admits of proof, depends on other premises; and if the proof of the proof be continually demanded, it must either end in an unproved premise, or in the acknowledgment that there cannot be reached any premise on which the entire series of proofs depends.
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> "Hence Philosophy, if it does not avowedly stand on some datum underlying reason, must acknowledge that it has nothing on which to stand—must confess itself to be baseless."

But the question immediately arises, "How are unproved and unprovable self-evident truths to be sought?" Manifestly by introspection alone—the careful analysis of consciousness by each one for himself.

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* 'Psychology,' vol. ii. p. 391.

In order successfully to combat with those who accept idealism we must, for the sake of those who do not accept the nature-given bridge between object and subject, begin from a purely subjective basis.

This, as has been said, is the method declared necessary by Mr. Spencer himself, and he also tells us * to the same effect:—

> "The first step in a metaphysical argument, rightly carried on, must be an examination of propositions for the purpose of ascertaining what character is common to those which we call unquestionably true, and is implied by asserting their unquestionable truth. Further, to carry on this inquiry legitimately, we must restrict our analysis rigorously to states of consciousness considered in their relations to one another: wholly ignoring anything beyond consciousness to which these states and their relations may be supposed to refer. For, if, before we have ascertained by comparing propositions what is the trait that leads us to class some of them as certainly true, we avowedly or tacitly take for granted the existence of something beyond consciousness; then, a particular proposition is assumed to be certainly true before we have ascertained what is the distinctive character of the propositions which we call certainly true, and the analysis is vitiated. If we cannot transcend consciousness—if, therefore, what we know as truth must be some mental state, or some combination of mental states; it must be possible for us to say in what way we distinguish this state or these states. The definition of truth must be expressible in terms of consciousness; and, indeed, cannot otherwise be expressed if consciousness cannot be transcended. Clearly, then, the metaphysician's first step must be to shut out from his investigation everything but what is subjective; not taking for granted the existence of anything objective corresponding to his ideas, until he has ascertained what property of his ideas it is which he predicates by calling them true."

Now, although I have the good fortune to agree, to a certain extent, with Mr. Herbert Spencer as to the limits and necessary conditions of inquiry, yet my view as to the ultimate and final test of all truth whatever differs profoundly and fundamentally from his.

I differ from him, and deem his conception of this test to

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* 'Essays,' vol. ii. p. 400 (stereotyped edition).

be inadequate and false, because he makes that test a purely negative one. He asserts that "inconceivability" is the ultimate and supreme test of truth.

He tells us :—*

> "A discussion in consciousness proves to be simply a trial of strength between different connexions in consciousness—a systematized struggle serving to determine which are the least coherent states of consciousness. And the result of the struggle is, that the least coherent states of consciousness separate, while the most coherent remain together; forming a proposition of which the predicate persists in the mind along with its subject. . . . If there are any indissoluble connexions, he is compelled to accept them. If certain states of consciousness absolutely cohere in certain ways, he is obliged to think them in those ways. . . . Here, then, the inquirer comes down to an ultimate uniformity—a universal law of thinking."

Mr. Spencer's test of ultimate truths false because merely negative.

As I have said, I consider Mr. Spencer's test inadequate, and am convinced that his analysis of consciousness is incomplete and misleading. He fails to distinguish between two distinct classes of ultimate psychical phenomena, and consequently does not really accept, as he professes to do, the absolute dicta of consciousness for the basis of his philosophy. He fails to distinguish between merely negative mental impotencies or simple inconceivabilities on the one hand and positive perceptions or intuitions on the other. He fails to note the utterly different classes of judgments which severally affirm either that they simply *cannot* conceive a given proposition to be true, or that they *positively do* see that the opposite of a given proposition cannot be true. Negative perceptions of simple inconceivability are reflex, but positive intuitions (as when I gaze at a picture on the wall before me) are direct.

Mr. Spencer distinguishes between two classes of unbelievable propositions, namely: (1) the simply unbelievable or *incredible*, and (2) the *inconceivable*. He defines † the former as a proposition "which admits of being framed in thought, but is so much at variance with experience" "that its terms cannot be put in the alleged relation without effort;" and he gives us an example—a cannon-ball fired from England to America. An inconceivable proposition is defined by him as "one of which the terms cannot, by any effort, be brought before consciousness in that relation which the proposition asserts between them:" and he gives as examples of inconceivability "that one side of a triangle is equal to the sum of the other two sides;" and* the idea of resistance, disconnected from the idea of extension in the resisting object.

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* 'Psychology,' vol. ii. p. 450.
† *Ibid.* vol. ii. p. 408.

Now, in the first place, it must be presumed that with Mr. Herbert Spencer the term "framed in thought" is equivalent to "represented in imagination," and the distinction he draws is as true as obvious, between propositions which can be imagined but are not to be believed, and those which cannot be imagined at all. He does not, however, as has been said, distinguish sufficiently between propositions, as a little introspection will convince any unprejudiced experimenter.

Two distinct classes of unimaginable propositions.

There are, in fact, not one, but two distinct classes of unimaginable propositions, and it is the second of these (ignored by him) which alone compels the mind to absolute, unconditional, universal, and necessary assent to their contradictories, because their contradictories are seen to be absolutely, unconditionally, universally, and necessarily true.

There are altogether four kinds of propositions in consciousness:—

1. Those which can be both imagined and believed.
2. Those which can be imagined but cannot be believed.
3. Those which cannot be imagined but can be believed.
4. Those which cannot be imagined and are not believed, because they are positively known to be absolutely impossible.

We need not occupy time with a consideration of the first two kinds, but the latter two require careful discrimination. It is surely somewhat surprising that Mr. Spencer does not discuss the two meanings of the word "inconceivable," pointed out long ago in the controversy between Mill and Whewell, and fully admitted by Mr. G. H. Lewes, who observes:* "That which is unpicturable may be conceivable; and the abstraction which is impossible to . . . . imagination is easy to conception." The word "inconceivable" is sometimes taken to denote simply that which the mind cannot picture in a distinct mental image. At other times it is made use of to signify that which is "unintelligible" or "unthinkable." But a great number of things which cannot be pictured to the imagination can most certainly be thought and understood, and none of those who uphold the validity of our intuitions of objective necessary truth pretend that that which cannot be *imagined* is necessarily untrue. Fortunately, in this matter of the declarations of consciousness, the appeal is to facts and experiments—facts that can be observed, experiments that can be carried on by every one a little advanced in philosophy, and therefore possessing that which is a necessary condition of such advance, namely, a habit of careful introspection. I venture confidently to affirm that we have as certain evidence for this distinction of kind between our own thoughts as we have for the very being of those thoughts themselves. The existence of this distinction as a *fact* is incontrovertible, and the fact of this declaration of consciousness should be first carefully noted; its *validity* may be considered afterwards.

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* 'Psychology,' vol. ii. pp. 406, 407.

The first class of Mr. Spencer's inconceivable propositions (our simply unimaginable ones) are, or, for all we see, may be, the mere results of mental impotence; they are but negatively and passively inconceivable. The second class of inconceivable propositions (our necessarily false ones) are those which are positively and actively inconceivable, because they are clearly known by the mind to be absolutely and universally impossible. At present we have not to consider whether such perceptions are objectively true and valid, but to point out that, as a fact, they subjectively *exist.*

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* 'Problems of Life and Mind,' vol. i. p. 420.

Let us, then, first note certain propositions which the mind seems impotent to imagine, but which the intellect can both understand and believe. The intellect clearly conceives a force varying inversely as the square of the distance between two bodies it reciprocally affects; yet this variation cannot be adequately represented by any image to the imagination. We can, again, conceive an infinite addition of fractions, which shall yet never attain to unity; but such a conception is utterly beyond the power of the imagination. Again, we can not only conceive but it is evidently a necessary truth that $(a^2 + a\,b + x) + (a\,b - x + b^2) = (a + b) \times (a + b)$, let a, b, and x, represent whatever whole numbers they may; yet this can by no means be directly represented by the imagination.

A fallacy of Professor Helmholtz.

But conceptions may be formed as to modes of existence of which we have had no experience whatever, and *necessary* deductions can even be drawn from such deductions. Thus Professor Helmholtz has conceived* "beings living and moving along the surface of a solid body, who are able to perceive nothing but what exists on this surface, and insensible to all beyond it;" and he adds, "if such beings lived on the surface of a sphere, their space would be without a limit, but it would not be infinitely extended; and the axioms of geometry would turn out very different from ours, and from those of the inhabitants of a plane. The shortest lines which the inhabitants of a spherical surface could draw would be arcs of greater circles;" also there would be many shorter lines between the same two points if there were two poles. Moreover, he tells us, such beings "would not be able to form the notion of parallel geodetical lines, because every pair of their geodetical lines, when sufficiently prolonged, would intersect in two points," &c. This passage is not only interesting as demonstrating our power of transcending experience by conception, but even more so as the solemn enunciation of a transparent fallacy by a man of eminence. Professor Helmholtz concludes: "We may resume the results of these investigations by saying that the axioms on which our geometrical system is based are no necessary truths." And Professor Clifford * cites with approval the article here quoted, and adopts its conclusions. Nevertheless the fallacy is surely transparent. Unless geometrical axioms were necessary truths, it would be impossible for these professors to declare what would or would not be the necessary results attending such imaginary conditions. And "other systems" could not, as Professor Helmholtz admits † they may, "be developed analytically with perfect logical consistency." If such beings as are supposed called the lines referred to "straight," they would *mean* by that word what we should call "arcs of great circles." Whether such beings could conceive parallel lines or not, there is no evidence to show, but there is no shadow of foundation for asserting that, if they *could* conceive them, they would not perceive the impossibility of their ever meeting, as we can perceive the necessary relations of their supposed space conditions which, by the hypothesis, are not ours.

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* 'The Academy,' vol. i. p. 128.

On this subject Mr. Lewes has observed: ‡ "In a space of two or of four dimensions many geometrical propositions which relate to a space of three dimensions would not be true. Who doubts it? Who expects that the same results can be the product of different factors?"

Mr. Spencer's example of absolute inconceivability.

Mr. Spencer, as we have seen, deems it absolutely inconceivable that an unextended object can offer resistance or exercise pressure. Nevertheless, he himself is able to conceive "body," as really apart from extension, and in terms of force only—since that which is described must be conceived; and he tells us § it is

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* 'Macmillan's Magazine,' October 1872, p. 504.
† 'The Academy,' vol. i. p. 130.
‡ 'Problems of Life and Mind,' vol. i. p. 378.
§ 'First Principles' (2nd edition), p. 167.

"manifest that our experience of *force* is that out of which the idea of matter is built. Matter as opposing our muscular energies, being immediately present to consciousness in terms of force; and its occupancy of space being known by an abstract of experiences originally given in terms of force; it follows that forces, standing in certain correlations, form the whole content of our idea of matter." But it is undeniably true that very many persons who conceive a pure spirit to be unextended and not to occupy space, yet at the same time find no difficulty in very distinctly converting in thought that which to Mr. Spencer is inconceivable. That this is so a multitude of believers in spiritism will attest, and their evidence to the fact of "conceivability" is equally valuable, whether they are or are not deceived as to facts. Again, the doctrine that the soul is whole and entire in every part of the body is a conception utterly transcending imagination, but one which has been and is accepted, believed, and reasoned about by thousands of the most acute and cultivated intellects. Some not only avow their power of conceiving that space may be bounded, but even announce that we may be shortly enabled to assert its actual extent.*

Our perception of necessary truths not limited by experience.

But that our perception of necessary truth is not limited by experience may be shown by the fact that we are not compelled to conceive that of which we have, and our ancestors, however remote, have ever had, uniform and unvarying experience. We have ever seen with our eyes and heard with our ears, yet we can conceive of vision and audition taking place in quite other parts of the body instead. We have experience but of the five senses, apart from the muscular sense, yet we can not only believe in the possibility of other senses, but conceive the existence of a sense directly revealing to us the actinic properties of light, or the chemical composition of crystals, by special modifications of consciousness, which modifications are now, of course, unimaginable to us. We have never experienced colour apart from extension, nor an extended object not coloured, and yet these properties can be conceived as distinct though they cannot be so imagined. But an effective *argumentum ad hominem* may be addressed to Mr. Mill, who tells us he can conceive that 2 and 2 may make 5, for most assuredly such a power transcends the experience of all his ancestors, and will transcend that of his successors to their latest posterity. Indeed, as Mr. Martineau observes,* "Experience proceeds and intellect is trained, not by association but by *Dissociation*, not by reduction of pluralities of impression to one, but by the opening out of one into many; and a true psychological history must expound itself in analytic rather than synthetic terms." But what is experience? A stone cannot "experience," nor can experience be taken as ultimate. The very acquisition of experience implies innate laws or principles. Instead of experience being able to account for innate principles, innate principles are needed to explain the acquisition of experience. As Mr. Mott observes,† the defect of the materialistic view generally, "is that it confounds the physical conditions of experience with experience itself, which is nothing but mental change; and that it tacitly assumes, in defiance of the evidence, that consciousness depends on nothing but physical change."

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* See Professor Clifford's article in 'Macmillan's Magazine' of Oct. 1872, p. 511.

Propositions positively seen to be necessarily true.

Let us now consider those propositions which are deemed by the mind to be necessary and universal, not from a passive impotence to disassociate two mental images (such as those of colour and extension), but from an active power of positive perception of which the intellect is self-conscious. It requires but a little candid introspection to see how different is the mental declaration with regard to those unimaginable conceivabilities we have noticed, and such propositions as that "things which are equal to the same thing are equal to one another;" "a thing cannot both be and not be at the same time in the same sense." The subjective difference is surely plain enough. Every sane man must admit that he clearly sees—sees borne in on him as *necessary* truths—that two straight lines can never enclose a space; that twice five must always be ten; and that ingratitude can under no circumstances be a virtue. If he denies that he perceives these judgments as necessarily true in any conceivable case as it arises, then he either does not understand the real meaning of such judgments—in Mr. Spencer's words, "they have not clearly represented to themselves the propositions they assert"—or his mental condition is pathological.

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* 'Essays,' p. 271.

† 'On the Materialism of Modern Science,' an opening address read before the Literary and Philosophical Society of Liverpool, October 5th, 1874, p. 15.

The judgment that the three angles of a triangle should be together equal to two right angles, I perceive to be a mental fact of quite a different kind from my inability to imagine unextended colour or a boundary to space. Such a judgment I see, if I can see anything, to be one the falsehood of which is not negatively unthinkable, but absolutely and positively impossible even to Omnipotence itself, and this because I see the affirmative to be absolutely and necessarily true.

Moreover, of all my subjective certainties none are to me so certain as that which affirms those judgments which (rightly or wrongly) I deem absolutely and universally necessary. If then subjective certainty is our ultimate test, such judgments override all others; and to deny them invalidates every possible judgment, and logically plunges the doubter, if he is consistent, into absolute, unqualified scepticism. The existence then, *as a fact*, of these supreme and active perceptions as to necessity and impossibility (the existence of which as distinguished from negative inconceivabilities is ignored by Mr. Spencer) may be taken as one of the most certain and indubitable facts of consciousness.

If there was but the one kind of inconceivable propositions—namely, those negatively inconceivable, we should be driven, as Mr. Spencer says, to accept them as limits for us whether objectively and universally valid or not. But the recognition of the quite other kind of active, positive perceptions of inconceivability (of perceived universal impossibility), together with the recognition that these *looked at from the point of view of pure subjectivity* assert themselves as supreme, gives us full warrant to assert universally necessary truth or logically forces us, if we decline to accept such truth, into the quagmire of universal doubt.

Mr. Spencer has justly observed that the passive inconceivabilities are necessities of thought to us, and that by refusing to accept them we pass into a state of mental confusion, and even more or less physical impotence must result from a refusal to act as if they were valid. This confusion and this impotence can be remedied alone by a practical acceptance of their objective validity. In the same way the necessities given to us by our supreme intuitions as to impossibility and necessity are practically *active* necessities of thought. Every man is spontaneously convinced of their necessary truth, and acts on such conviction in every case as it arises seriatim by a corresponding spontaneous judgment. If in reflecting on such spontaneous judgments we begin to doubt as to their objective validity, we begin *ipso facto* to undergo a process of mental disintegration and intellectual paralysis, only to be remedied by the acceptance of the objective validity of such truths. The objective validity of these perceptions is given in the very substance of each such perception itself. To doubt of the objective truth of each is to doubt that of which we are directly and supremely certain. If two straight lines can enclose a space, if a whole may be less than its part, then we have no certainty but that the same thing cannot both "be" and "not be" at the same time and in the same sense, and we are landed in complete scepticism. But Mr. Spencer himself has implicitly admitted this very distinction which he explicitly ignores, and not only recognises an active power of positively perceiving necessary truths, but also the distinction between actual and possible being. He says [*]—speaking of the inquiry after fundamental truth—"Hence he has no appeal from this ultimate dictum [i.e., inconceivability]; and seeing this, he SEES that THE ONLY POSSIBLE further achievement is the reconciliation of the dicta of consciousness with one another." Any one, however, who should deny that we have, *as a fact*, an intuition of "objective, universal, and absolute necessity," may be confuted by bringing forward the simple fact that some men assert that they have that idea, and that the very opponents of such assertors must themselves have it also, since they could not argue against and controvert that of which they have no knowledge.

Mr. J. Martineau, in criticising Mr. Mill, observes:—[†]

> "When he" [Mr. Mill] "says outright that *à priori* beliefs really inherent in the mind are totally unworthy of trust, however imperiously they may compel submission; and when he casts about for some appeal against them—either from thought to 'fact' or from faculty to faculty—he seems to lose all his logical bearings, and forget the base he had measured. What security can there be for *any* truth—of '*fact*' or of thought—*à posteriori* or *à priori*—if the positive and primary affirmations of our mental nature may be suspected of making fools of us? The assumption of unveracity once made, cannot arbitrarily stop with the province which Mr. Mill wishes to discredit. He himself also must, somewhere or other, come to an end of his 'evidence' and 'proof,' and be landed on principles *not* derivative but primary: and then he must either accept their coercion 'because there is no *use* in appealing from it,' or unconditionally rely on them as the report of truthful faculties; and in either case is on the same footing as his *à priori* neighbour. Be the 'proof' what it may which authenticates the belief, it is the faculty which, in the last resort, authenticates the proof."

In the controversy, therefore, between Mr. Spencer and Mr. Mill it appears to us to be clear that both are right and both are wrong. Mr. Mill is right in affirming that there are inconceivabilities which may yet be believed, but wrong in denying that our subjective judgments as to impossibility and necessity are both objectively valid and supreme criteria of truth. Mr. Spencer is right in affirming that the ultimate declarations of our intellect are such supreme criteria of truth, but wrong in declining to attribute to such declarations absolute necessity and universal objective validity. But both Mr. Mill and Mr. Spencer err in failing to distinguish between (1) that negative inconceivability which comes from impotence or lack of experience; and (2) that positive, active, perception of impossibility which comes from intellectual power and light. It is this active perception which reveals to us truths, neither the result of mere experience nor of logical ratiocination; since they are no sooner thought of than we assent to them, and the validity of all generalisation and deduction rests upon them as upon original and fundamental principles.

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[*] 'Essays,' vol. ii. p. 407.

[†] *Ibid.* p. 103.

Summary of the propositions here arrived at.

The following propositions seem, then, to be incontrovertible:—

1. Knowledge must rest on truths which are incapable of being proved, but are evident by their own intrinsic light, otherwise we have either absolute scepticism or a *regressus ad infinitum*.

2. These fundamental truths must be subjectively evident.

3. Such fundamental subjective truths declare their objective, absolute, and universal truth.

4. The intellect is thus carried by its own force from subjectivity to objectivity.

From this it follows that we have a supreme degree of certainty as regards a variety of objective truths which the intellect has the power of apprehending by the aid of sensible phenomena. Our rational nature is thus seen to be capable of knowing truly what is within its range, and is justified in its conviction as to metaphysical certainty.

The same degree of inevitable certainty, guarded by the same penalty of absolute scepticism, attends other dicta. That "whatever thinks exists" is known to us as a necessary *à priori* truth by its own evidence; but that I myself exist is known to me not by evidence of any kind, but by consciousness, to be a particular contingent fact of supreme certainty.

Mr. Bain, instead of, with Mr. Spencer, taking mental impotence as the ultimate criterion of truth, lays down two postulates, (1) the absence of contradiction, and (2) the uniformity of nature, as his basis.

Mr. Bain's ultimate criterion of truth.

As to the first postulate, such a test is evidently quite unfitted for its purpose; since to accept without question the fact that we have had past experiences is at once to assume that very objectivity the acceptance of which has yet to be justified. Accordingly we find Mr. Bain somewhat naïvely further postulating "trust in memory" as one of the guarantees of his ultimate postulates.

As to the second postulate, he tells us:* "The fact generally expressed of nature's uniformity, is the guarantee, the ultimate major premiss of all induction." . . . . "We can give no reason, no evidence, for this uniformity; and, therefore, the course seems to be to adopt this as the finishing postulate." A glance inwards will, I think, convince most unprejudiced readers that their subjective certainty as to the "uniformity of nature," considered by itself, is slight indeed, compared with their conviction that "what thinks exists," or that "the whole is greater than its part."

Mr. Lewes's ultimate postulate and foundation of all truth is "the equivalence of the terms of a proposition;" and he endeavours to reduce the logical principles of identity, contradiction, and excluded middle to his "principle of equivalence." But his principle is only to be tested by the principle of identity itself; and the very application of this test assumes objectivity (as it involves memory and the substantial Ego), and the action of an intellect which sees the necessity that whatever is must be that which it momentarily is—that nothing can both be and not be at the same time and in the same sense.

Here a few words may be added respecting Mr. Spencer and the principle of contradiction. One would have thought that this law would have been fully ad-

The principle of contradiction.

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* 'Logic,' vol. i. p. 273.

mitted by Mr. Spencer, as it has been by almost every other philosopher. It is strange that any one should think that the law of contradiction is derivative, or that it reposes on anything stronger and more fundamental than itself. Yet this is what Mr. Spencer appears to do. That the same thing cannot both "be" and "not be" at the same time, and in the same sense (i.e. the law of contradiction), we maintain to be an *à priori* necessity of thought—not negative, the mere result of a mental impotence, but positive and known to us as such by its own evidence. Yet though Mr. Spencer denies* the validity, as an ultimate truth, of the principle of contradiction, he unconsciously affirms it. He affirms it, moreover, in that which he represents to be absolutely fundamental and ultimate, namely, our inability to dissever certain conceptions. For, supposing we know that we *have* tried to dissever such conceptions and *failed*, how can we be certain that we have not at the same time *not* tried and yet succeeded—except upon that very principle of contradiction itself?

And the highest faculties of the human mind, ignored.

Yet, again, it is nothing less than marvellous to note how completely Mr. Spencer ignores all the highest faculties of the soul. We have the most ingenious and interesting constructions of sensible perceptions of increasing degrees of complexity wrought out with an abundance of illustration and a facility of research truly admirable. But what is the outcome? We feel, indeed, we have an insight into the power of mere sensation, and the consequent faculties of brutes, such as we never had before, as also into the *materials* of our own thoughts; but we have no increased knowledge of our own *intelligence* itself. Our cat's mind is indeed made clear to us, but not our own. Those supreme conceptions and perceptions of our minds—Truth and Goodness—reflexly contemplated *as* Truth and Goodness, are simply passed over. Even the same thing must be said of "relation." The relativity of our knowledge is indeed a constant theme, and the "relativity of feelings" and "of relations" occupies, as before said, two chapters; yet of our perceptions of relations *as* relations, we have not one word.

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* 'Psychology,' vol. ii. pp. 424, 425, from "But even" to "invalidity."

As also by Mr. Lewes.

Mr. Lewes also shows a strange want of appreciation of our intellectual faculties, and he and Mr. Spencer are by no means the only instances of this. Indeed, the most remarkable circumstance connected with living English writers on questions such as these, is the conspicuous absence in them of any manifest comprehension of those very powers which they so continually exercise, and their apparent want of appreciation of that reason to which they verbally appeal. "Hamlet" with "the Prince of Denmark" omitted, may well serve as a symbol of the curious psychology of the school to which reference is here made, namely, that of the Agnostics.

The validity of our reasoning faculty.

The next fact which reflection, combined with what we at least take to be external observation, shows us, is the validity of our reasoning processes. When to the proposition, "All equilateral triangles are equiangular," we add, "The triangle A B C is equilateral," we see that a third truth is implicitly contained in the two propositions which truth explicitly stated is the conclusion, "The triangle A B C is equiangulâr." The nature of this process of inference is expressed by the word "*therefore*," and a little introspection shows us that it is something widely different from the association of different things together in the imagination, so that the recurrence of one induces the recurrence of a group of others, as when the recurrence of a smell occasions the revival in imagination of places, persons, and circumstances of various kinds. Moreover, in this conclusion there is no freedom of choice. We are compelled to admit any conclusion logically contained in admitted premises, just as we are compelled to admit the truth of the self-evident proposition, "What thinks, exists." But it should be noted that though our reason is necessitated, and acts fatally as regards the explicit evolution of implicit truth, and as regards the immediate apprehension of self-evident truth, yet it is not *blind;* it sees both the objective truths, and their necessity. Our intellectual perception of necessary truth is not a passive impotence of imagining two things apart (such as our inability to imagine uncoloured extension), but is an active power of perceiving what is *positively* and necessarily true. Thus it sees that if we deny in a conclusion truth latent in admitted premises, or refuse to accept both terms of a self-evident proposition, we thereby violate the principle of contradiction and the primary truth that what is, is. As to the principle of contradiction—that anything cannot both be and not be, at the same time and in the same sense—our perception of its force is plainly no mere mental impotence, but is positively known to us by its own evidence. The denial or doubt of this principle, or the denial or doubt of our process of inference, results necessarily, like our doubt as to our own existence, in absolute scepticism and mental imbecility. If anything may both be and not be at the same time, then the intellectual world becomes at once a chaos, and all argument unmeaning. Nay, it is even impossible to really deny its truth, for if it is not true, we cannot be certain that in denying it we are not actually affirming it, or that a doubt respecting it is not the same as absolute certainty that it is true.

Mr. Lewes confounds reasoning with sensible association.

Mr. Lewes altogether confounds "reasoning" with sensible association, and entirely ignores our intellectual apprehension of what is implied in the pregnant word "therefore." He tells us:* "Inference lies at the very root of mental life; for the very combination of present feelings with past feelings, and the consequent inference that what was formerly felt in conjunction with one group of feelings, will again be felt if the conditions are reinstated—this act of inference is necessary to the perception of the object 'apple,' and is like in kind to all other judgments. Inference is 'seeing with the mind's eye,'—reinstating what has been, but now is not, present to sense." This is an excellent exposition of what may be, and probably is, that complex association of sensations which takes place in brutes, and causes some of their actions to simulate inference. It quite fails, however, to recognise that active light of the intellect by which we know we see a conclusion in the premisses which we express by the word "therefore," and which we recognise as something fundamentally different from the recurrence of one set of sensations with another with which habit has previously associated them. Hence the curious passage,* in which Mr. Lewes, addressing self-conscious men, says: "To understand what reasoning is, we must first see it in animals." And yet he admits:† "that although a conclusion is always implicitly in its premisses, it is not always explicitly there, and a middle term may be used to point out this inconspicuous relation." But all that rational logicians assert of syllogistic reasoning *is*, that it is a process serving to make implicit truth explicit to us. He continues:‡ "Could we *realise* all the links in the chain" (of reasoning) "by reducing conceptions to perceptions, and perceptions to sensibles (and this would be effected by placing the corresponding objects in their actual order as a sensible series), our most abstract reasonings would be a succession of sensations." This is confused and misleading. Such a process, if possible, would make us dispense with reasoning, in the case supposed, but it would not make our "reasonings" into "successions of sensations," the reasonings would cease. Reasonings are also represented by philosophy as having no place in intelligences higher than our own—in pure intelligences—but for another reason, namely, the power of such intelligences to see directly, truth which to us is implicit, i.e., to see it without the need of any process such as we require to render it explicit.

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* 'Problems of Life and Mind,' vol. i. p. 257.

In this and the preceding chapter it has been endeavoured, very imperfectly, to take for granted nothing not vouched for by the acts of our own minds; though it has been impossible (owing, at least in part, to the force of nature and natural reason) not to use language implying the acceptance of the ordinary beliefs respecting the existence of a real objective world external to our own minds.

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* 'Problems of Life and Mind,' vol. ii. p. 162.

† *Op. cit.* p. 165. ‡ *Op. cit.* p. 169.

The facts referred to in these first two chapters may be summed up as follows:—

Summary and conclusion.

The consideration of our own continued existence reveals to us objective truth and our possession of it.

Our self-consciousness also reveals to us that, similarly, there are universal, necessary, undemonstrable truths (as, e.g., " What thinks exists "), and that we can know them.

Similarly, our intellect shows us the validity of our own reason, and the objective validity of the syllogism which renders implicit truth explicit to us. We see that the ultimate criterion of truth is a mental state of conviction produced by our clearly perceiving that a given proposition is *positively* true necessarily, and not that we are in a state of mere *impotence* not to think it. Such a test constitutes the principle of certitude. This principle, those of identity and contradiction, together with the validity of the reasoning process and our intuition of enduring self-existence, are five elements which together constitute a firm foundation upon which may be raised the logical edifice of coherent truths. All these truths have our self-consciousness, our knowledge of the enduring Ego, as their starting-point, and are involved in that knowledge and flow from it.

Other consequences also necessarily follow from the truths here maintained. If our certainty as to our own continuous past existence is valid (and we have seen at what a price it can alone be denied), we may be equally certain that, if there are other beings like ourselves who can know us, the present existence of each of us is an objective truth to such other beings, and our intellect carries us at once also in this way from subjectivity to objectivity; to the world of existences outside our consciousness from the world of our conscious being.

We may here a second time insist upon the validity of our intuitions as the properties of space and number, that they are truths to which no possible exception can ever exist at any time or in any place; even Omnipotence itself being unable to make two right lines inclose a space, or the cube of 3 to be other than 27. But consequences follow which are yet more important. To anticipate what will be treated of later, it may be even now affirmed that the element of moral worth which our intellect declares to attach to certain actions under certain conditions, is justified by our recognition of necessary truth and our perception of it as universally and necessarily valid—an objective truth, not a mere subjective impression. Thus that faculty of cognizing objective truth which is called the intellect, informs us not only of the existence of a persistent self, the Ego, but also of a persistent not-self, the non-Ego; of objective relations in the order of intellectual truths and of objective relations in the order of moral worth. All these intuitions and cognitions hang together as necessarily connected. To invalidate one is to invalidate all. To assert one is, virtually, to assert all. They cannot be denied without falling into scepticism which invalidates its very self by its own doubt as to the existence of the doubter who doubts it. To conclude, men have absolute certainty of the very highest degree as to their own existence; and yet this certainty cannot be logically asserted without implying the existence of a whole sphere of objective truths which the intellect has the faculty of perceiving by the very light by which those truths manifest themselves to the intellect.

These views being accepted, we cease to be confined within a narrow sphere of mere subjective feelings, with our highest intellectual efforts resulting in a mere recognition of our "Nescience." On the contrary, the nobility of man's intellectual nature reappears more distinctly and grandly than before its temporary eclipse occasioned by self-refuting doubts and a shallow psychological analysis. The intellect is, indeed, still seen to be limited—to be capable, in its present condition, of learning but in part and through sensible experience; yet it is seen to be furnished with perceptions which are true and valid, and with a power of learning accurately what comes within its range—the endowment of a truly intellectual nature, though at the same time of a corporeal organism, in other words the property of a rational animal, that is, of man.

CHAPTER III.

THE EXTERNAL WORLD.

> **"The real existence of an external world made up of objects possessing qualities such as our faculties declare they do possess, cannot be logically denied, and may rationally be affirmed."**

A justification of our belief in the external world here logically required.

In the two preceding chapters the endeavour has been made to take for granted as little as might be possible such facts as are not given in immediate consciousness. It has, indeed, been sought to show that our very consciousness itself demands, at the price of utter scepticism, the recognition of the validity of our conviction that something beyond consciousness really exists. But the very title of this work implies the belief of its author in the real existence of external, material nature, and its purpose cannot further be pursued consistently without an attempt to justify such belief.

Fortunately, that justification is as little really required for the mass of even the most cultivated part of mankind, as is the justification of our conviction of our own continued existence. As, however, to be logical, it was necessary for us to start by justifying the latter conviction, it is similarly needful that the more or less sceptical cavils prevalent with respect to our real knowledge of the material world should be disposed of in order that the subsequently treated matters may not come before us out of their logical order.

Ever since Descartes and Locke, more or less scepticism, more or less uncertainty respecting the truth of our conviction as to a really existing material world has prevailed amongst

Prevalent scepticism on this subject amongst modern philosophers, and its cause.

the metaphysical writers most popularly known in England, such as, e.g., Berkeley, Hume, Mill, Bain, Spencer, &c., &c. Starting with the conception that the objects immediately known are sensations, and that the objects of perception are but mediately known by inference from such sensations, they have, with more or less accord, naturally arrived at the conclusion that as inferences are liable to error there can be no certain truth but in feelings. Yet examination of that which self-consciousness tells us takes place in our own minds shows that when we look at anything, as, e.g., at a tree, we do not perceive sensations, and infer from them that we have before us a single, solid, enduring object of a certain shape and colour which we call a tree; but that our intellect at once and instantaneously in the very act of feeling immediately and directly perceives the tree itself. This is what my mind declares to me to be here and now the case. It says that it does not perceive an image of the tree, either in the eye or elsewhere; that the tree is not presented to it by any intermediate agency whatever, but that the mind, in the act of sensation, directly makes the very tree itself present before it, while at the same time it equally declares that the sensations themselves are not the tree but are caused by the action of my sensitive nature (my various organs of sense) and the tree perceived.

It must be borne in mind that in our inquiry we are compelled to start from subjectivity, and that our supreme test is what the mind declares here and now to be its clear, positive, and absolute conviction. Appeals, then, from that conviction to the infant mind, or to theoretical notions as to the development of reason, are quite out of court. Nevertheless, lest we should seem to shirk a familiar objection, we may here note that as soon as the infant's mind knows colours, smells, shapes, &c., it also knows the coloured, odorous, extended objects themselves. Even the infant never infers from sensations to objects, its intellect recognises the one as soon as the other, though at first it can of course recognise neither.

He who is often spoken of as the parent of idealism, Berkeley, taught that nothing existed outside us but other minds, and that the apparently existing external world was but the action of the Divine mind upon created minds; and some modification of idealism, of a less pious nature, is professed by most of the writers on philosophy popular in England to-day—by Tyndall and by Huxley equally with Bain and Mill.

Mr. John Stuart Mill.

John Stuart Mill conceived the material world as made up of "permanent possibilities of sensation," but admitted the reasonableness of the belief in some kind of an external world beyond consciousness, and in the existence of other "threads of consciousness" besides our own. Mill, for a logician, had a singular tendency to contradict and refute himself, and Mr. Martineau has pointed out[*] how, by Mill's system, "we are landed in this singular result; our only sphere of cognisable reality is subjective: and *that* is generated from an objective world which we have no reason to believe exists. In our author's theory of *cognition*, the *non-ego* disappears in the ego; in the theory of *being*, the ego lapses back into the non-ego. Idealist in the former, he is materialist in the latter."

But if Mill is open to this charge of inconsistency, *à fortiori* are those teachers of physical science or psychology open to it, who, professing idealism, teach what is practically materialism—keeping "the word of promise to our ear to break it to our hope." As to such teachers, Mr. Sterling remarks[†] (referring immediately to Mr. Bain): "is not materialism all that is for them fundamental? and is not the idealism but, profanely to say it, the tongue in the cheek—to the priest, who incontinently sinks silent, dumbfounded?"

Mr. Spencer's Transfigured Realism.

Mr. Herbert Spencer differs notably from the general run of thinkers of the school of Mill in that he asserts himself to be not an Idealist but a Realist, and even actively combats idealism. To his own system he gives the title of "Transfigured Realism."

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[*] 'Essays,' p. 101.

[†] 'As regards Protoplasm,' p. 62.

In the seventh part of his Psychology, Mr. Spencer justifies in several ways what he thus calls "realism," that is, his belief that the external, material world really exists objectively, "and in such a way that each change in the objective reality causes in the subjective state a change *exactly answering to it*—so answering as to constitute a *cognition* of it."*

His justification of it.

This view he justifies by an argument from "priority," i.e., from the fact that the realistic conception is prior to the idealistic conception, so that† "in no mind whatever can the idealistic conception be reached except through the realistic one."

He also justifies it by an "argument from simplicity," which consists of a demonstration that, if our conviction of the world's existence is not an intuition but an *inference*, then the system of idealism is an inference indefinitely more cumbrous and complex, and therefore *more liable* to error. He says:—‡

> "While the first involves but a single mediate act, the second involves a succession of mediate acts, each of which is itself made up of several mediate acts. Hence, if the one mediate act of Realism is to be invalidated by the multitudinous acts of Idealism, it must be on the supposition that if there is doubtfulness in a single step of a given kind, there is less doubtfulness in many steps of this kind."

Finally, he advances an "argument from distinctness," which reposes on the far greater vividness of sensations than of ideas which, according to Mr. Spencer, are but plexuses of faint sensations.

He also§ contends against thinkers of the schools of Hume, Berkeley, and Kant, that their very expositions of idealism cannot be made without the use of terms which imply that very realism they deny.

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* 'Psychology,' vol. ii. p. 497. The italics are ours.

† *Op. cit.* p. 374.

‡ *Op. cit.* p. 378.

§ *Op. cit.* pp. 312–366.

Here, then, we are led to infer that the common belief is valid, and that space, time, figure, number, extension, motion, &c., really exist objectively as they are subjectively apprehended. It must be so, since no system can be deemed either *primitive, simple,* or *distinct,* which asserts that neither extension, nor figure, nor number is in reality what it appears, or that the objective connexions amongst these properties are what they seem to us to be, or that* "what we are conscious of as properties of matter, even down to its weight and resistance, are but subjective affections produced by objective agencies which are unknown and unknowable."

Outcome of it.

Yet this is the outcome actually arrived at by our author—a result which to most will appear little distinguished from scepticism, since it is admitted by him to agree with idealism and scepticism in affirming that the subjective modification of consciousness in the perception of any external body "contains no element, relation, or law that is like any element, relation, or law," in such external body.

Thus the universe, as we know it, disappears not merely from our gaze, but from our very thought. Not only the song of the nightingale, the brilliancy of the diamond, the perfume of the rose, and the savour of the peach lose for us all objective reality—these we might spare and live—but the solidity of the very ground we tread on, nay, even the coherence and integrity of our own material frame, dissolve from us, and leave us vaguely floating in an insensible ocean of unknowable potentiality. And *this* is REALISM; this is what is justified to us by being primitive, simple, and distinct, as being prior to idealism, "everywhere and always, in child, in savage, in rustic, in the metaphysician himself."†

Mr. Spencer may well call this "Transfigured Realism." If he were to invite hungry men to a feast, and having discoursed to them on the digestibility of sauces and meats, the relations of appetite, digestion, and nutrition, then led them into a room not furnished with tables supporting the meats themselves, but hung round instead with tables of the chemical formulæ of animal substances, the disappointment of his guests would hardly be less than that of many readers who, having read his arguments from priority, simplicity, and distinctness, come finally upon "transfigured realism" as the result.

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* 'Psychology,' vol. ii. p. 493.

† *Op. cit* vol. ii. p. 374.

I am, of course, quite aware of the distinctions drawn by Mr. Spencer between what he calls crude realism and the realism adopted by him, but whether or not his metaphysical position be tenable, I am quite certain it cannot be defended by arguments which are valid only to support that dualism, that distinctness yet true correspondence between matter and mind, which has been, and ever will be, the natural and practically ineradicable spontaneous conviction of mankind.

His reply to criticism.

To criticism of this kind, however, as made by Mr. Henry Sidgwick, Mr. Spencer has replied at length in the 'Fortnightly Review' for November 1873. In order, therefore, to be quite sure of not misrepresenting him or doing him unintentional injustice, I quote his reply *in extenso.* He tells us:—

> "All which my argument implies is that the direct intuition of Realism must be held of superior authority to the arguments of Anti-Realism, *where their deliverances cannot be reconciled.* The one point on which their deliverances cannot be reconciled is the existence of an objective reality. But while against this intuition of Realism I hold the arguments of Anti-Realism to be powerless, because they cannot be carried on without postulating that which they end by denying; yet, having admitted objective existence as a necessary postulate, it is possible to make valid criticisms upon all those judgments which Crude Realism joins with this primordial judgment: it is possible to show that a transfigured interpretation of properties and relations is more tenable than the original interpretation.
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> "To elucidate the matter, let us take the most familiar case in which the indirect judgments of Reason correct the direct judgments of Common Sense. The direct judgment of Common Sense is that the Sun moves round the Earth. In course of time, Reason finds certain difficulties in accepting this *dictum* as true. Eventually, Reason hits upon an hypothesis which explains the anomalies, but which denies this apparently-certain *dictum* of Common Sense. What is the reconciliation? It consists in showing to Common Sense a mode of inter-

pretation which equally well corresponds with direct intuition, while it avoids all the difficulties. Common Sense is reminded that the apparent motion of an object may be due either to its actual motion or to the motion of the observer; and that there are terrestrial experiences in which the observer thinks an object he looks at is moving, when the motion is in himself. Extending the conception thus given, Reason shows that if the Earth revolves on its axis there will result that apparent motion of the Sun which Common Sense interpreted into an actual motion of the Sun; and the common-sense observer becomes thereupon able to think of sunrise and sunset as consequent on his position as spectator on a vast revolving globe. Now if the astronomer, setting out by recognizing these celestial appearances, and proceeding to evolve the various anomalies following from the common-sense interpretation of them, had drawn the conclusion that there externally exist no Sun and no motion at all, he would have done what Idealists do; and his arguments would have been equally powerless against the intuition of Common Sense. But he does nothing of the kind. He accepts the intuition of Common Sense respecting the reality of the Sun and of the motion; but replaces the old interpretation of it by a new interpretation reconcilable with all the facts.

"Just in the same way that here, acceptance of the inexpugnable element in the common-sense judgment by no means involves acceptance of the accompanying judgments; so, in the case of Crude Realism, it does not follow that while against the consciousness of an objective reality the arguments of Anti-Realism are utterly futile, they are therefore futile against the conceptions which Crude Realism forms of the objective reality. If Anti-Realism can show that, granting an objective reality, the interpretation of Crude Realism contains insuperable difficulties, the process is quite legitimate. And, its primordial intuition remaining unshaken, Realism may, on reconsideration, be enabled to frame a new conception which harmonizes all the facts.

"To show that there is not here the 'mazy inconsistency' alleged, let us take the case of sound as interpreted by Crude Realism, and as re-interpreted by Transfigured Realism. Crude Realism assumes the sound present in consciousness to exist as such beyond consciousness. Anti-Realism proves the inadmissibility of this assumption in sundry ways (all of which, however, set out by talking of sounding bodies beyond consciousness, just as Realism talks of them); and then Anti-Realism concludes that we know of no existence save the sound as a mode of consciousness: which conclusion, and all kindred conclusions, I contend are vicious—first, because all the words used connote an objective activity; second, because the arguments are impossible without postulating at the outset an objective activity; and third, because no one of the intuitions out of which the arguments are built is of equal validity with the single intuition of Realism that an objective activity exists. But now the Transfigured Realism which Mr. Sidgwick thinks 'has all the serious incongruity of an intense metaphysical dream,' neither affirms the untenable conception of Crude Realism, nor, like Anti-Realism, draws unthinkable conclusions by suicidal arguments; but, accepting that which is essential in Crude Realism, and admitting the difficulties which Anti-Realism insists upon, reconciles matters by a re-interpretation analogous to that which an astronomer makes of the solar motion. Continuing all along to recognize an objective activity which Crude Realism calls sound, it shows that the sensation is produced by a succession of separate impacts which, if made slowly, may be separately identified, and which will, if progressively increased in rapidity, produce tones higher and higher in pitch. It shows by other experiments that sounding bodies are in states of vibration, and that the vibrations may be made visible. And it concludes that the objective activity is not what it subjectively seems, but is proximately interpretable as a succession of aerial waves. Thus Crude Realism is shown that while there unquestionably exists an objective activity corresponding to the sensation known as sound, yet the facts are not explicable on the original supposition that this is like the sensation; while they are explicable by conceiving it as a rhythmical mechanical action. Eventually this re-interpretation, joined with kindred re-interpretations of other sensations, comes to be itself further transfigured by analysis of its terms, and re-expression of them in terms of molecular motion; but however abstract the interpretation ultimately reached, the objective activity continues to be postulated: the primordial judgment of Crude Realism remains unchanged, though it has to change the rest of its judgments."

Its insufficiency.

But, in spite of all that Mr. Spencer can urge, it must be affirmed, our reason assures us, that the number, figure, and extension of objects are just as certainly real as is the existence of anything beyond consciousness at all. If our conceptions of solidity, figure, and extension are delusions, scepticism has indeed an impregnable stronghold. But, as we shall shortly see, Mr. Spencer goes so far as to discredit the validity of our perceptions even as to *difference itself.*

His proof-case as to sound.

Mr. Spencer, in his proof-case just quoted, however, bases his argument upon an alleged delusion we necessarily lie under with respect to sound, and this is a matter of great importance in his psychology.

He says:* "Although the individual sensations and emotions, real or ideal, of which consciousness is built up, appear to be severally simple, homogeneous, unanalysable, or of inscrutable natures, yet they are not so. There is at least one kind of feeling which, as ordinarily experienced, seems elementary, that is, demonstrably, not elementary." . . . "Musical sound is the name we give to this seemingly simple feeling, which is clearly resolvable into simpler feelings." He then goes on to remind us that slow taps are heard as taps; but when very rapid "the noises are no longer identified in separate states of consciousness, and there arises in place of them a continuous state of consciousness, called a tone;" that this rises in pitch with the rapidity of the taps, and that other simultaneous similar series produce *timbre.* This is further enforced elsewhere (p. 199), by recalling to mind how the same vibrating tuning-fork jars the teeth, and at the same time "awakens" through the skull "a consciousness of sound," apparently showing that the very same thing is under different circumstances "feeling of touch" and "perception of tone." The fallacy which Mr. Spencer has here fallen into is the one well known in logic as the *fallacia unius causæ*—one fully discussed by Mr. Mill in his chapter on the law of causation.

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* 'Psychology,' vol. i. p 148, § 60.

The truth of his affirmations denied

But I deny *in toto* the truth of Mr. Spencer's assertions as to such feelings. Not only I deny that the "one kind of feeling" selected is "demonstrably not elementary," but I affirm that it is demonstrable that what Mr. Spencer terms its "proximate components" are *no parts of it at all.* My position may be demonstrated thus:—Recurring sensations of beating and jar do not become a sound, they *are* "sound" at once, as soon as perceived by the auditory organ at all. Similarly a musical note is not made up of rapid audible beats, but only begins to exist when the beat-sounds cease. A "perception of musical tone" and a perception of "beat" are different feelings. All that Mr. Spencer really shows and proves is that diverse conditions result in the evocation of diverse simple perceptions, of which perceptions such conditions are the occasions He does not in the least show that such perceptions (of a musical note) are made up of other sensations (slightly-heard, shocks, or raps). The first sensations, the heard-raps, cease entirely, and give place to the other musical note, but there is no evidence that they constitute the other.

According to Mr. Spencer's argument, if a certain number of taps produce a pleasant feeling, and an increased number in the same time cause pain, we must conclude that pleasure and pain are the same feeling! The physical conditions of feeling are one thing, the feelings themselves are another. With different physical conditions we may have different feelings. Because two kinds of auditory sensation have for cause the same visible object in different states, it no more follows that they are the same than that seeing and hearing are the same because a vibrating cord is seen by the eye as well as heard by the ear.

Mr. Spencer's reply to the charge of "fundamental incoherence."

To an objection of Mr. Sidgwick's, that "Mr. Spencer, for the purposes of objective psychology, apparently professes to know matter and motion really, while, as a result of subjective analysis, he concludes that they cannot be known," Mr. Spencer himself replies as follows:—

> "Doubtless there seems here to be what he calls 'a fundamental incoherence.' But I think it exists, not between my two expositions, but between the two consciousnesses of subjective and objective existence, which we cannot suppress and yet cannot put into definite forms. The alleged incoherence I take to be but another name for the inscrutability of the relation between subjective feeling and its objective correlate which is not feeling—an inscrutability which meets us at the bottom of all our analyses. An exposition of this inscrutability I have elsewhere summed up thus:—
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> "See, then, our predicament. We can think of Matter only in terms of Mind. We can think of Mind only in terms of Matter. When we have pushed our explorations of the first to the uttermost limit, we are referred to the second for a final answer; and when we have got the final answer of the second, we are referred back to the first for an interpretation of it. We find the value of x in terms of y; then we find the value of y in terms of x; and so on we may continue for ever without coming nearer to a solution."—*Prin. of Psy.*, § 272.
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> "Carrying a little further this simile, will, I think, show where lies the insuperable difficulty felt by Mr. Sidgwick. Taking x and y as

the subjective and objective activities, unknown in their natures and known only as phenomenally manifested; and recognizing the fact that every state of consciousness implies, immediately or remotely, the action of object on subject or subject on object, or both; we may say that every state of consciousness will be symbolized by some modification of $x\ y$—the phenomenally-known product of the two unknown factors. In other words, xy', $x'y$, $x'y'$, $x''y'$, $x'y''$, &c., &c., will represent all perceptions and thoughts. Suppose, now, that these are thoughts about the object; composing some hypothesis respecting its characters as analyzed by physicists. Clearly, all such thoughts, be they about shapes, resistances, momenta, molecules, molecular motions, or what not, will contain some form of the subjective activity x. Now let the thoughts be concerning mental processes. It must similarly happen that some mode of the unknown objective activity y will be in every case a component. Now suppose that the problem is the genesis of mental phenomena; and that in the course of the inquiry bodily organization and the functions of the nervous system are brought into the explanation. It will happen, as before, that these, considered as objective, have to be described and thought about in modes of $x\ y$. And when by the actions of such a nervous system, conceived objectively in modes of $x\ y$, and acted upon by physical forces which are conceived in other modes of $x\ y$, we endeavour to explain the genesis of sensations, perceptions, and ideas, which we can think of only in other modes of $x\ y$, we find that all our factors, and therefore all our interpretations, contain the two unknown terms, and that no interpretation is imaginable that will not contain the two unknown terms.

"What is the defence for this apparently circular process? Simply that it is a process of establishing *congruity* among our symbols. It is finding a mode of so symbolizing the unknown activities, subjective and objective, and so operating with our symbols, that all our acts may be rightly guided—guided, that is, in such ways that we can anticipate, when, where, and in what quantity one of our symbols will be found. Mr. Sidgwick's difficulty arises, I think, from having insufficiently borne in mind the statements made at the outset, in 'The Data of Philosophy,' that such conceptions as 'are vital, or cannot be separated from the rest without mental dissolution, must be assumed as true provisionally;' that there is no mode of establishing the validity of any belief except that of showing its entire congruity with all other beliefs, and that 'Philosophy, compelled to make those fundamental assumptions without which thought is impossible, has to justify them by showing their congruity with all other *dicta* of consciousness. In pursuance of this distinctly-avowed mode of procedure, I assume as true, provisionally, certain modes of formulating the manifestations of the unknown objective activity, certain modes of formulating the manifestations of the unknown subjective activity, and certain resulting modes of conceiving the operations of the one on the other. These provisional assumptions, having been carried out to all their consequences, and these consequences proved to be congruous with one another and with the original assumptions, these original assumptions are justified; and if, finally, I assert, as I have repeatedly asserted, that the terms in which I express my assumptions and carry on my operations are but symbolic, and that all I have done is to show that by certain ways of symbolizing, perfect harmony results—invariable agreement between the symbols in which I frame my expectations, and the symbols which occur in experience—I cannot be blamed for incoherence. Lastly, should it be said that this regarding of everything constituting experience and thought as symbolic has a very shadowy aspect, I reply that these which I speak of as symbols are real relatively to our consciousness; and are symbolic only in their relation to the ultimate reality."

Rejoinder to such reply.

So much for Mr. Spencer's reply, which I have been anxious to represent completely and *in extenso.* And no doubt, as might be expected in a thinker of his repute, the incoherence referred to must be attributed less to him than to the unfortunate system he adopts. But incoherence there none the less really *is ;* and if such incoherence results, as he says it does, from his theory of consciousness, so much the worse for that theory. We who are absolutely certain that our intellect has the power (however and whencesoever obtained) of knowing both mind and matter as real, objective, persisting existences, are *not* driven into any such inconsistency and incoherence; and if incoherence of the mind be, as Mr. Spencer himself asserts it to be, a necessary consequence of his system, it amounts, in fact, to a *reductio ad absurdum* of that system itself.

Need of a more detailed survey of his positions.

Before however considering that climax of negation, Mr. Spencer's denial of the objective validity of our very perception of "difference" itself, it will be well to review carefully, and in some detail, one or two of his anterior assertions and inferences with regard to the mind, and its relation to existences external to it.

His observations on the relativity of our feelings.

Indeed, Mr. Spencer's views, as expressed by him in his 'Psychology,' merit a more careful exposition, that the reader may be able to estimate fairly his denial of the truth of what our faculties tell us.

Therein he also urges, in advocacy of the relativity of our feelings, that certain oscillations produce an auditory feeling, but only in one organ, and that the same oscillations produce other feelings in other organs; whence, he says, we may become fully convinced that the form of objective action we call "sound" has not the slightest kinship in nature with the sensation of sound which it arouses in us. He argues similarly with respect to the other senses, declaring that "the subjective state no more resembles" its objective cause "than the pressure which moves the trigger of a gun resembles the explosion which follows." So also, he says, we may conclude with respect to tension and other sensations of mechanical force; "thus we are brought to the conclusion that what we are conscious of as properties of matter, even down to its weight and resistance, are but subjective affections produced by objective agencies that are unknown and unknowable. All the sensations produced in us by environing things are but symbols of actions out of ourselves, the natures of which we cannot even conceive." But here he is *too hasty*. Though all *sensations* would of course vanish in an insentient universe, qualities these senses make known might nevertheless be known by pure intellect, and thus all the objectivity in sensations which the greatest "realist" would desire will have existed in the world for all time. It is the ego which *perceives* that the violet is sweet, though it is the nose which smells it; and though, of course, we cannot conceive (because the elementary experience is lacking) *how* such sweetness could become known without a sense-organ, can we really understand how it is known to us *with one?* No one ever supposed a mechanical force to resemble a sensation, but to become manifested to us *through* sensations. The senses are inadequate to exhaustively reveal all objectivity, but they are not mendacious. Our sensations are, as Mr. Spencer says, "symbols," but they are symbols by and through which the intellect comes to know objectivity — being, substance, extension, number, form, &c., things not to be expressed except in *terms of sensation*, but nevertheless not apprehended *as* sensations.

He goes on to declare* the harmony of nervous physiology with his view, saying that when the structures of nerve-threads are considered, it becomes inconceivable that any resemblance exists between the subjective effect and that objective cause which arouses it through the intermediation of changes resembling neither. That it becomes inconceivable *how* such a resemblance can be produced, *concedo;* that it is inconceivable *that* it is produced, *nego*. Moreover, by the term "*effect*" is here properly meant, not the sensation merely, but the intellectual conceptions made known in sensation. Comparatively few persons will be ready to concede that as regards the extension, number, and shape of objects, "there is no likeness either in kind or degree"† between such qualities as they exist objectively, and as they are known to us subjectively by the agency of our bodily organs.

He next‡ turns to what he calls "an all-important implication," namely, the existence of an external world—to our conviction "that the active antecedent of each primary feeling exists independently of consciousness." But how then can Mr. Spencer dare to affirm dogmatically that there is no likeness between that antecedent as objectively existing and that antecedent as known by us? We, on the contrary, may quite logically *on other grounds* arrive at an independent conclusion that there *is* such a likeness. "Likeness" I assert; "identity" I, of course, deny. Probably the material universe is clothed in a splendour of multitudinous kinds, some few of which are partly and feebly revealed to us with varying degrees of incompleteness by our senses, though revealed with ample sufficiency for our needs. Probably it everywhere throbs with objective harmonies, appreciated fully by pure spirits, and made known to us in a rudimentary and fragmentary way through vibration in our ears. And so with sight, smell, touch, and taste. "Touch" is but a minute acquaintance with surface as extended and figured; and even "taste," though to us known so poorly and so rarely as to seem unworthy for spiritual enjoyment, may be conceived, though not imagined, to be a perennial source of spiritual enjoyment, not of course as tasted by an organ, but as intellectually known and apprehended.

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* 'Psychology,' vol. i. p. 207, § 87.

† *Op. cit.* p. 194.

‡ *Op. cit.* § 88.

The absence of light subjectively is darkness, and most of Mr. Spencer's school would deem the objective universe to be dark and also silent. But these conceptions, "darkness" and "silence," are really as "subjective" as light and sound. The absence of light as "*sensed*" by us is not objectively "darkness," but something which we cannot conceive. To think of the unseen universe as dark is to express objectivity in terms of the subjective, and is just as much to attribute objectivity to mere subjective sentiency as would be to adopt the most vulgar notion of the reality in the external world of our own very feelings of different kinds. Mr. Spencer's denial of likeness between the subjective and objective is indeed most unreasonable. He may say that from his point of view he sees no evidence, actual or possible, of such likeness, but he cannot affirm, without irrational arrogance, that our senses *cannot* have been organised so as, most mysteriously, to make us truly acquainted with objective existences, together with a variety of the powers and properties which such existences possess.

The impossibility of logically denying the objective validity of our perceptions as to even the secondary qualities of objects.

When treating of the relativity of relations between feelings, he observes:* "When we see that what is, objectively considered, the same connection between things may, as a space-relation in consciousness, be single or double; when we remember that, according as we are near or far off, it may be too large to be simultaneously perceived, or too small to be perceived at

Mr. Spencer on the relativity of relations between feelings.

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* *Op. cit.* pp. 214, 215.

all; it becomes impossible to suppose any identity between this objective connection and some one of the multitudinous subjective relations answering to it." But surely this is the *very* poorest and shallowest sophistry. No one has supported the assertion of "IDENTITY" even between the intellectual concept gathered from changing phenomena, and the object of that concept itself; still less between it and "some one of the multitudinous subjective relations [feelings] answering to it." But this absence of identity does not even go one step towards invalidating the correspondence between certain of the objective characters of objects and intellectual cognitions of such objects in and by the sensations they occasion, which sensations *present* them (in the sense of "*make them present*" to the intellect.

On the effects of structure, age and state on relations of sequence.

Next (p. 215, § 91) he examines compound relations of sequence, and he considers that herein qualitative differences of apprehension may be produced by the different structures of different animals, adding, "there is most likely a marked qualitative difference between that undeveloped sense of duration derived solely from the experiences of inner changes, and that developed conception of time derived mainly from outer changes, but conceived to be a form of both outer and inner changes."

Now as to qualitative differences in animal sensations, all Mr. Spencer requires may be conceded, as such differences are but the materials of intellect. But if an intellectual animal could think by means of such materials of merely internal sensations as those Mr. Spencer supposes, such an animal would perceive time itself to be such as (like in nature to) the time we perceive—though its mode of arriving at such perception would be different. It need hardly be added that there is indeed a difference of quality between our perception of time and any feelings of a polyp.

As to quantitative differences of perception of sequence he remarks (p. 216): "Months to the old man appear no longer than weeks to the young man." Just so, the old man remarks a changed condition of sensibility, and he perceives a similarity of *feeling* between months now and weeks formerly as a result of that change; but he does not *intellectually* perceive months to *be* weeks, though they *feel* like them to him.

As to the effect of opium, &c., I readily concede all Mr. Spencer advances, but the matter is of no moment and beside the question.

With respect to changes produced by "change of position among our experiences," he remarks (p. 217), as to the recollection of an evening passed somewhere a year ago: "There is a *conviction* that it was several hours long; but when contemplated it cannot be made of equal apparent length with the several hours just passed." I reply to this singularly frivolous remark—to the *feelings*, no! to the *intellect*, yes! It would be inconvenient as well as useless if our feelings did not change with distance in time as well as in place. Mr. Spencer admits a "CONVICTION," what more can we possibly require? He adds (p. 218), "life seems no longer at forty than it did at twenty." This is not my experience. I can recollect the leading events back year after year for thirty years, which I could not have done at twenty. He also says: "To a lowly-endowed creature, conscious only of internally-initiated changes, it [time] cannot appear what it does to a creature chiefly occupied with changes that are externally initiated; since, in the last, it is partially dissociated from both orders of changes. Whence it seems inferable that, only partially dissociated as it is, it cannot have in consciousness that qualitative character which absolute dissociation would give it, and which we must suppose it to have objectively." This he maintains on account of the reason just before given, that "time, considered as an abstract from relations of sequence, must present a different aspect according to the degree of its dissociation from particular sequences." But to this may be replied: The idea of time is one thing, the possibility of recalling a greater or lesser number of more or less vivid phantasmata of things which happened in a given quantity of time, say a month or year, is a very different one;

nor, probably, would even Mr. Spencer have ever confounded them together had not his theory obliged him to do so.

Mr. Spencer concludes this section by saying that "compound relations of sequences as we conceive them cannot be quantitatively like the connections beyond consciousness to which they refer, is proved by the facts that they vary in their apparent lengths with the structure of the organism, with its size, with its age, with its constitutional state, with the number and vividness of the impressions it receives, and with their relative positions in consciousness. Manifestly, as no one of these variously-estimated lengths can be taken as valid rather than the others, it becomes impossible to suppose equality between an interval of time as present to consciousness, and any nexus of things which it symbolises." But these difficulties as to time may be answered in a way parallel to that in which those of space were replied to. "Feelings" change, but do not necessarily carry with them changes in the intellectual perceptions they occasion; nay, the very fact of the phenomenal changes brings out yet more clearly the objectivity they reveal, and which is known by and to the *intellect* correctly, in spite of sensational variations, when the organism is not so deranged that the intellectual faculties are thereby paralysed.

He then (p. 219, § 92) proceeds to consider the compound relation of difference, and he infers that (since it "has to be conceived in terms of impressions that differ; and since the conception of difference cannot be dissociated from the order of impressions in which it is presented, if there is but one such order"), the "conception of difference becomes more independent of particular differences," "in proportion as the impressions become more multitudinous in their kinds," "and that, *therefore, in higher creatures it is not qualitatively the same as in lower creatures.*" This should in fact be thus amplified, and such amplification would do away with that confusion between intellect and sense which Mr. Spencer makes. He should say: *Therefore in higher creatures the material (the direct sensitive cognition of things which differ) is gradually* *more and more elaborated, so that when taken up by an intellectual principle it is far indeed from being the same as in lower creatures.*

He observes (p. 221) "that the compound relation of difference, as we know it, is dependent on structure," size, and state. I reply: As we "know it," meaning, as it is presented to us *sensibly*—yes! As we "know it," meaning, as it is presented to us *intellectually*—no!

On the relation between our perception of sequence, co-existence and difference, and their sensible accompaniments.

We come now to the climax of negation before referred to, namely, Mr. Spencer's denial of the objective validity of our perception of "difference" itself—presuming Mr. Spencer means "difference" and not individual differences between sensations. At p. 222, § 93, he considers the pure relations of co-existence, sequence and difference, and concludes that their relations "*as we know them*" do not obtain beyond consciousness, because they cannot be thought of without a "tacit recognition" of concrete existence ultimately derived from our feelings. But as to this it may be replied that "difference" (like genus and species) exists *formally* only in mind, though *materially* in things. The abstract is not, of course, the concrete. As to the "tacit recognition" of the concrete, that is merely the phantasmata necessary to all knowledge in our present condition. They are merely counters made use of by the mind. We understand five purely; through five counters, or five anythings. What proves that Mr. Spencer can think of pure abstract difference is, that he can write about it. Then as to this expression above quoted, "as we know them," we may reply: "As," in the sense of the means whereby we have them—no! "As," in the sense of agreeing with our intellectual apprehension so obtained—yes!

He next goes on (for the sake of clearness!) to attempt to simplify the expressions co-existence and sequence by means of terms expressing existences which in the first have, in the second have not, differences "in their order." Phenomena which can be experienced in different orders of succession (as the phenomena presented by an orange) being phenomena of co-existence, while those which can be experienced only in a single order (as those of a musical air) are phenomena of sequence. But what is the meaning of *order* if we have not yet got sequence, i.e., time? It may be contended that order as an intellectual act is primary, but anyhow it cannot be *really* understood without the addition in thought of either space or time.

Mr. Spencer sums up (p. 224) by reducing all perception to shocks accompanying transitions from one feeling to another. "That is, the relation of difference as present in consciousness is nothing more than a change in consciousness. How, then, can it resemble, or be in any way akin to, its sources beyond consciousness?" But what can be the meaning of saying that it is not *akin,* and *differs* from its source, if the category of difference is not applicable beyond feeling? If it is not so applicable, then it no more *differs* than it *agrees,* there being simply *no relation.* In fact, however, the perception of difference is *elicited* by shocks of sensitive change, but it itself is very much more, and the *intellectual* unit is a perception of being and non-being.

He goes on to say there is nothing between two colours, as they objectively exist, "answering to the change which results in us from contemplating first one and then the other." I reply: Nothing between them like to the *feeling* of the change in the sensible perception—no! Like to what the intellect apprehends concomitantly with that feeling—yes! "Their relation [the two colours] as we think it, *being nothing else than a change of our state,* cannot possibly be parallel to anything between them, when they have both remained unchanged." This is equivalent to saying that no one thing differs from any other objectively; because no objective difference whatever is the same as a nervous shock. But this extreme position may be turned round and made use of to prove the objectivity of extension, since the objectivity of "difference" is certain, and yet it is the very same arguments (thus shown to be futile) which are brought against the objectivity of extension which are brought against the objectivity of "difference." Moreover, if a subjective relation of difference cannot exist without the momentary co-existence of its terms, the objectivity of difference is most *true* on this very account, because an objective relation cannot exist without this momentary existence of *its* terms.

Mr. Spencer's view as to nervous relations.

He then (p. 224, § 94) tries to show that physiology harmonises with his doctrine, saying that all relations are composed of nervous elements, not "intrinsically different," and therefore cannot resemble "intrinsically-different objective connections." But what, then, is meant by using the term "intrinsically different?" Moreover, a set of apparently similar nerves may be as truly organized for revealing a variety of objective conditions as any one set. Mr. Spencer has fallen into the fallacy that the effect as such must resemble its cause.

He tells us that "it *needs* but to think of a brain as a seat of nervous discharges, intermediate between actions in the outer world and actions in the world of thought, to be impressed with the *absurdity* of supposing that the connections among outer actions, after being transferred through the medium of nervous discharges, can reappear in the world of thought in the forms they originally had." But where is the "absurdity?" It is indeed true that it is most mysterious *how* the nervous system gives us even any one symbolical message from objectivity such as Mr. Spencer allows that it does give. It is not *really* a bit more mysterious how it can reveal to us the objective relations which the realist believes it does reveal than how it reveals what Mr. Spencer allows it does reveal. Even he must admit that it can never be *disproved* that the universe has been so ordered that real objective relations become known to us *through* these "sensible symbols," provided we are adult, healthy, and use *all* our organs and faculties, sensible and intelligent. For what can be more absurd, when God has given us five senses to make use of, to complain that the use of one by itself leads into error? The truthfulness of the intellect's report as to the qualities of the objective world has the same basis as has its report as to the objective existence of that objective world, and the latter reposes on reason, as Mr. Spencer truly represents. He ends the chapter (p. 225, § 95) by referring to the assumption universally made that "there exist beyond consciousness, conditions of objective manifestation which are symbolised by relations as we conceive them." "The very proposition that what we know as a relation .... does not resemble any order or nexus beyond consciousness, implies that there exists *some such* order or nexus beyond consciousness." But how can it be "some such" order or nexus if there is *no* resemblance between them—"no likeness between them either in kind or degree?" (p. 194, § 78). The only meaning Mr. Spencer can really have is that which all philosophers would, of course, concede, namely, that objective conditions are not identical with subjective sensibilities, though made known to us through the latter by a complex and indirect process.

As to the reality of an ontological order and nexus.

He then concludes by asserting the reality of an absolute and unknowable ontological order, giving rise to the phenomenal order, and an ontological nexus giving rise to phenomenal differences. "Though the relation of difference constituted, as we have seen, by a change in consciousness, cannot be IDENTIFIED with anything beyond consciousness; yet that there is something beyond consciousness to which it is due, is an inevitable conclusion; since to think otherwise is to think of change taking place without an antecedent" (pp. 226, 227). In the last words we see Mr. Spencer admits the fundamental nature of the law of causality. But the word "*identified*" should be carefully noted. Certainly what he speaks of cannot be *identified*, but whoever said it could? Whoever thought of *identifying* the mechanism of perception with the thing perceived? If he had only contended against "identity" instead of against "likeness" "either in kind or degree," there would have been no word to dispute, and no ill effects would have been involved, in his system. The ontological order—dark to brutes—is revealed to man by his sensible experiences (feelings), and corresponding faint feelings (phantasmata) are, in this life, the *conditions* of its reproduction or presence in thought. But because we cannot think without phantasmata it does not follow that those *phantasmata* THEMSELVES are all our thoughts in each case. Consider the idea expressed by the term "any man!" How can the phantasm be all the meaning of the term in such a case?

Mr. Spencer's confusion of the intellect with the sensible occasions of its activity.

Mr. Spencer always treats the mere means and occasions of intellectual action as *intellectual action itself*, owing to his fundamental confusion of thought with feeling, which leads him to such nonsense as speculating as to an oyster's conception of time and space! He indeed approaches the truth, but then stops short of it. It is certainly most true that it requires but a little change to transform his system (in spite of its generally very different spirit) into scholasticism. His fundamental error is not seeing that imagination and sensible phantasmata suggest to our intellect truths beyond images, not therefore adequately expressible by words though *conveyed* by words with practical efficacy to other minds. Meanings beyond the words themselves, and still more beyond their more ancient meanings, are continually suggested by language. Who, when he hears of the "spirit of Shakespeare," thinks of the pulmonary exhalation from his lungs? So such words as "substance," "cause," are symbols, and suggest images through which the intellect understands what is hyper-sensible, and by such language conveys it to other minds. Men who do not *really* so understand them have either a mind which is imperfectly developed or are otherwise abnormally constituted.

Mr. Lewes's position.

Mr. Lewes's position is somewhat singular. He altogether dissents from and protests against Mr. Spencer's Transfigured Realism, and maintains that "feelings" are the very "things in themselves," as also that we have not, and cannot have, knowledge of anything but feelings. Thus he seems a pure idealist, while yet, at the same time, he protests against idealism. In part, however, his expressions harmonise with that realism which is here maintained, and which places philosophy in harmony with the healthy common sense of mankind. For all that, he is really an idealist, like Berkeley, with the important difference that, instead of a God, he makes the non-ego an inscrutably mysterious something, of which, as far as he has yet explained himself, he declines to assert anything whatever. He says,* "It may sound an extreme paradox to say that things have not separate existence apart from feelings; but it is a paradox which must be accepted, when we consider that things are what they are in the given relations; and that in relation to the sensitive organism the so-called 'thing' is what is present in feeling." Yet he goes on: "This is not a denial of the objective factor—the non-ego. It does not assert that the stone lying on the ground is not somewhat more than the feelings of it in you and me; all that is asserted is, that the 'somewhat' in *this* relation *is* what it is felt to be; and if I am asked what the postulated 'somewhat' is, if not the metaphysical thing in itself? I answer: The 'somewhat' is the abstract possibility of one factor of a product entering into relation with some different factors when it will exist under another form." But what is a "factor" but that which "does something?" and that which "does something" must "*be* something." There must be, then, a real objective existence of some kind external to the subjective factor. What Mr. Lewes must mean is that, apart from the subject, there is an existence forming one factor in every feeling, however diverse these feelings may be, and that the factor of all these different feelings may be one and the same in all cases, or different in each different case. An examination of the positive declarations of our own reason will, however, I venture to think, make plain that the intellect declares its perception of a stone which is first hot and then cold to be a perception of a real external objective existence, which remains one under these, though successively occasioning these diverse sensations. According to Mr. Lewes (if I have not misunderstood his very obscure expressions on the subject), it seems that there need be no objective, continued connexion between that non-ego which, joined with the ego, is "a hot stone," and that non-ego which, joined with the ego, is "a cold stone." If there *is* a persistent bond between these two non-egos, which is not also a bond between "the stone" and "grass," or any other parts of non-ego factors, then he must admit a real objective substance known to the intellect, but not to sense, in the stone.

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* 'Problems of Life and Mind,' vol. ii. p. 438.

He says: * "To say that we do not know the objects, but only the feelings they excite in us, is simply saying that we do not know what objects are in other relations than those of feeling—a truism which is quite irrelevant, but a truism on which metaphysicians have erected the idle mystery of the *Ding an sich*." Now I maintain that our intellect clearly tells us that we *do* "know what objects are in other relations than those of feeling," and that, therefore, instead of a "truism," it is a *falsism*.

Agrees with Mr. Spencer fundamentally.

But after all Mr. Lewes's protests against Mr. Spencer's system, his own is fundamentally very like it, for he tells us † (speaking of light and the luminiferous undulations): "We know that the undulations are present beyond the red and violet ends of the spectrum. . . . . Our cosmos is indeed the universe of feeling; but we postulate an universe of being; and the warrant for this postulate is the experience of ever-fresh accessions from the unknown to the known!" Mr. Lewes indeed can postulate no more than possibilities of fresh feelings.

But if he knows nothing but feelings, what can he mean by postulating a universe of being? for by that he must mean the "unfelt," which in his system is if not non-existent quite inexpressible, and practically equivalent to the unknowable of Mr. Spencer. He refrains indeed from saying that any changes in this being accompany changes in feeling.

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* *Op. cit.* p. 419.

† *Op. cit.* p. 235.

He is thus less realistic than Mr. Spencer in one respect, while in his assertion that the felt is indeed the real, he approximates to the philosophy here advocated, i.e., to the philosophy of Aristotle.

Recapitulation.

It is impossible, in a single chapter, to do more than glance at a few points in the great controversy respecting the validity of our ordinary conceptions of external nature. Enough, it is trusted, has however here been said to justify our proceeding henceforth to treat of the external world as an existence known to us in the way, and to the extent, ordinarily supposed. Grounding all our assertions upon the positive dicta of our intellect, we may affirm that we are conscious that in knowing things we really know them, and not an amalgam made up of a mixture of things with ourselves; and also that we know other existences to be both real and certain.

If idealism be true, then to each of us there can be but one existence the certainty of which can be ever confidently asserted, namely, our own; and yet our reason asserts unmistakably that there really are many other creatures of various kinds, rational and irrational, about us. Again, if the properties of objects, such as their colour, &c., do not appertain to persisting objects, they must themselves be, as Mr. Lewes says, the persisting objects—the things in themselves—the true substances. In that case a change in any accidental quality is equivalent to a substantial change in objects themselves, and a substance dyed another colour is no longer the same substance as before—a conclusion our reason vehemently rejects.

Conclusion, that we may securely repose on the declarations of our senses as to the existence and properties of external objects.

In conclusion, our reason affirms to us that we not only know our own existence, and that of other beings, but that the qualities we attribute to them are really theirs, not ours; and that if intelligences, equal to or greater than our own, can know such objects without the aid of sensitive organs, such intelligences would know, apart from sense, that things are the very things which our senses declare them to be, although it is conceivable that the number of other properties they might also recognise would indefinitely exceed in number such properties as we are able to know by our intellect acting through our sensitive organs. Our perceptions might be added to, but not contradicted.

If what has been here brought forward is correct—if the criticisms by which it has been sought to overthrow the cavils of those who would bid us distrust our faculties and the plain declarations of our intellect be just—it follows that the third lesson we may draw from nature is that we may repose securely in our spontaneous trust in the truthfulness of our natural faculties when matured and simultaneously employed in the quest of real and objective truth. In other words, that we may be certain that an external world really exists, and that its various parts really possess those very powers and properties which our senses and our reason combine to declare to us such objects do in fact possess.

CHAPTER IV.

LANGUAGE.

"Rational language is a bond of connexion between the mental and material world which is absolutely peculiar to man."

Language the bond between mind and matter.

IN the last chapter, an endeavour was made to justify our spontaneous belief in a real external world, possessing the properties we attribute to it in addition to our spontaneous belief in our own continued mental existence—in other words, a belief in the reality of the material world as well as the reality of the world of mind. We shall be following a natural order, therefore, if we now consider that which is the special bond and connexion between these two worlds, material and mental—that by which our feelings, memories, thoughts, and volitions are made manifest to the senses of other men, and that by which we ourselves come to learn other men's feelings, memories, thoughts, and volitions. I mean language.

Language emotional and rational.

But the word "language" denotes two very different things It denotes the expression of the mere feelings or emotions—*emotional language*, and it also denotes the expression of thoughts—*rational language*. It is the latter only which especially merits our attention here, as the language of mere feeling cannot by itself be said to be a bond of union between external nature and mind as revealed in the self-consciousness we are interrogating.

Rational speech is evidently made up of the union of two distinct factors—the one mental, the other corporeal—the one the idea conceived by the mind, the other the bodily action which gives expression to that idea. As in the overwhelming majority of instances that bodily action is vocal, these two component parts of speech have been distinguished respectively as the *verbum mentale* and the *verbum oris;* but as such bodily expression is not exclusively vocal, they might, perhaps, be better distinguished as the *verbum mentale* and the *verbum corporis.* The essence of rational language is mental—a primary intellectual power and activity; while the secondary part, the external expression (the *verbum corporis*), follows the intellectual activity, as is made evident by our constant process of inventing fresh terms in each science to denote new or better-defined expressions.

Rational language mental and bodily.

Great ambiguity and confusion, however, exists as to the different senses in which the term language may be used, and as to the different kinds of activity evoked by it. As has been just said, Rational expression is not exclusively oral, nor is all articulate speech rational. We may altogether distinguish six different kinds of language:—

Different categories of language.

1. Sounds which are neither articulate nor rational, such as cries of pain, or the murmur of a mother to her infant.
2. Sounds which are articulate but not rational, such as the talk of parrots, or of certain idiots, who will repeat, without comprehending, every phrase they hear.
3. Sounds which are rational but not articulate, such as the inarticulate ejaculations by which we sometimes express assent to or dissent from given propositions.
4. Sounds which are both rational and articulate constituting true "speech."
5. Gestures which do not answer to rational conceptions, but are merely the manifestations of emotions and feelings.
6. Gestures which do answer to rational conceptions, and are therefore "external" but not "oral" manifestations of the *verbum mentale.* Such are many of the

gestures of deaf mutes, who, being incapable of articulating words, have invented or acquired a true gesture-language.

The clear understanding of these distinctions is an indispensable preliminary to the study of language, in the widest sense of that term; it may be well, therefore, to recapitulate the characters of the actions which respectively belong to the above six categories, that they may be as clearly distinguished as possible.

The sounds emitted by brutes, however complicated or prolonged, which denote merely emotions and bodily sensations, belong to the first category. Mere articulate sounds, without concomitant intellectual activity, such as those emitted by trained parrots or jackdaws (and which, of course, are not "speech"), belong to the second category. The third category comprises inarticulate ejaculations and sounds which we sometimes make use of to express our approval or disapproval, our agreement or our disagreement with anything said to us. Articulate expressions of mental conceptions, or true speech, belong only to the fourth category. Gestures which are merely the manifestations of emotions and feelings are not the equivalents of speech, and belong to the fifth category. But gestures without sound may be rational external manifestations of internal thoughts, and, therefore, the real equivalents of words. Such may serve to call attention to objects, their agreements or their differences, and may express approval and assent, or the reverse, to observations made to us by others. All such belong to the sixth category. Thus it is plainly conceivable that a brute might manifest its feelings and emotions not only by gestures, but also by articulate sounds, without for all that possessing even the germ of real language. Similarly it is evident that a paralysed man might have essentially the power of speech (*verbum mentale*), though accidentally hindered from externally manifesting that inner power by means of the *verbum oris*. Normally, the external and internal powers exist inseparably. Once that the

External expression a necessary accompaniment of rational animality.

intellectual activity exists, it seeks external expression by symbols—verbal, manual, or what not—the voice or gesture-language. Some form of symbolic expression is therefore the necessary consequence of the possession of reason by an animal frame; while it is impossible that true speech can for a moment exist without the co-existence with it of that intellectual activity of which it is the outward expression—as well might the concavities of a sigmoid line be supposed to exist without its convexities.

We have said that a rational animal, if it exists at all, must acquire some form of expressing by external bodily symbols its internal expressions; and Mr. Tylor has made some remarks* respecting deaf-mutes which help to justify this assertion. He says, that though the existence of deaf-mutes proves that men may have thought without speech, yet not without "any physical expression," rather "the reverse." That men, not altogether paralysed, might have reason and yet no mode of externally manifesting it, is, however, a proposition which no sound philosopher ever dreamed of maintaining.

Prevalent confusion on the subject.

However, as has been said, the confusion generally existing on the subject of language is surprising; and it must be admitted that few recent intellectual phenomena are more astounding than the ignorance of these elementary yet fundamental distinctions and principles, exhibited even by conspicuous and widely-esteemed writers. Mr. Darwin, for example, does not exhibit the faintest indication of having grasped them; yet a clear perception of them, and a direct and detailed examination of his facts with regard to them, was a *sine quâ non* for attempting, with a chance of success, the solution of the mystery as to the descent of man. I actually heard Professor Vogt at Norwich (at the British Association Meeting of 1868), in discussing certain cases of aphasia, declare before the whole physiological section, "Je ne comprends pas la parole dans un homme qui ne parle pas;" a declaration which manifestly showed that he was not qualified to form, still less so to express, any opinion whatever on the subject. Again, Professor Oscar Schmidt, in trying to account for the natural origin of man, quotes, with approbation, Geiger's words: "Die Sprache hat die Vernunft geschaffen: vor ihr war der Mensch vernunftlos;" not seeing that he might as well attempt to accóunt for the "convexities" of a sigmoid line by its "concavities." As before said, the "concavities" could as easily exist before the "convexities" as the existence of the *verbum oris* could antedate that of the *verbum mentale.* It is almost enough to make one despair of progress when one finds such real "nonsense" solemnly propounded to a learned audience, and when such amazing ignorance shows itself in men who are looked up to as *teachers!* As Wilhelm von Humboldt has declared: "Man is man only through speech, but in order to invent he must be already man."

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* 'Researches into the Early History of Mankind,' p. 68.

Mr. Darwin's views.

Respecting Mr. Darwin, that section of the second chapter of his work, the 'Descent of Man,' which discusses language, exhibits such a combination of confused thought, with a habit of assuming as true the very point to be proved, that adequately to do it justice would require minute criticism. He makes use,* by implication, of the curious argument, that because two things have certain points of resemblance they cannot be fundamentally different. Thus, as if to diminish the force of the distinction between rational and emotional language, he tells us (what no one would think of disputing) that there *are* phenomena which are not distinctive. He says: "Articulate language is, however, peculiar to man; but he uses, in common with the lower animals, inarticulate cries to express his meaning, aided by gestures and the movements of the muscles of the face. This especially holds good with the more simple and vivid feelings, which are but little connected with our higher intelligence. Our cries of pain, fear, surprise, anger, together with their appropriate actions, and the murmur of a mother to her beloved child are more expressive than any words." To this we may reply: As stimulating to the emotions—yes! But what has that to do with the question of definite signs intelligently given and understood? It does not in the least diminish the force of the *distinction* that man makes use of these common instinctive signs as they are the natural consequences of his being an animal, which fact would naturally lead us to anticipate that he would manifest phenomena of the kind common to him and to brutes, as he, as *all* admit, shares the instincts and emotions of the latter. That he has a nature in many respects like theirs is perfectly compatible with his having a superior nature, of which latter brutes have no germ, rudiment or vestige whatsoever. Indeed, all the arguments and objections in Mr. Darwin's second chapter may be met by the simple assertion, that man being an animal has all the faculties of an animal which are subserved by his rational nature; and thus, very naturally, there results an external conformity of appearance though a modified one. Here, then, we have two quantities, a and $a + x$; and Mr. Darwin, seeing the two a's, but neglecting the x, represents the two quantities as equal. Even Mr. Darwin himself directly adds: "It is not the mere power of articulation that distinguishes man from other animals; for, as every one knows, parrots can talk; but it is his large power of connecting definite sounds with definite ideas; and this obviously depends on the development of the mental faculties." This is most true in one sense; and yet, with the notable exception that the distinctive character of man does not consist in his having this power "*largely*," but in his having it at all!

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* 'Descent of Man,' vol. i. p. 54.

He draws (vol. i. p. 59) a parallel between the vocal organs of apes which are not used for speech, and the vocal organs of certain birds which do not sing, but use such organs "merely for croaking." But "croaking" *is* essentially a sort of song, and means neither more nor less. But no ape's cries are essentially rational speech.

Mr. Darwin also misplaces the real point of distinction between emotional and rational language. He remarks, with respect to the faculty of articulate language, that of the distinctively human characteristics, this has "justly been considered as one of the chief" (vol. i. p. 53). I cannot agree in this. Some brutes can articulate, and it is quite conceivable that brutes might (though as a fact they do not) so associate certain sensations and gratifications with certain articulate sounds as, in a certain sense, to speak. That is to say, it is conceivable that a parrot might learn to speak certain words, which he has come to associate with some gratification, just as a dog who "begs" has associated that gesture with "sugar to follow," or other agreeable association. This, however, would in no way even tend to bridge over the chasm which exists between the representative reflective faculties and the merely presentative ones. Articulate signs associated only with sensible impressions would be fundamentally as distinct as mere gestures are from truly rational speech.

Mr. Darwin evades the question about language by in one place (vol. i. p. 54) attributing that faculty in man to his having acquired a higher intellectual nature; and in another, (vol. ii. p. 391), by ascribing his higher intellectual nature to his having acquired that faculty.

Our author's attempts to bridge over the chasm which, as before said, separates instinctive cries from rational speech are remarkable examples of groundless speculation. Thus he ventures to say—

> "That primeval man, or rather some early progenitor of man, *probably* (the italics are mine) used his voice largely, as does one of the gibbon-apes at the present day, in producing true musical cadences, that is in singing; we may conclude from a widely-spread analogy that this power would have been especially exerted during the courtship of the sexes, serving to express various emotions, as love, jealousy, triumph, and serving as a challenge to their rivals. The imitation by articulate sounds of musical cries *might* have given rise to words expressive of various complex emotions."

And again:—

> "It does not appear *altogether incredible*, that some unusually wise ape-like animal should have thought of imitating the growl of a beas-

> of prey, so as to indicate to his fellow monkeys the nature of the expected danger. And this would have been a first step in the formation of a language."—Vol. i. p. 56.

But the question, not whether it is incredible, but whether there are any data whatever to warrant such a supposition. Mr. Darwin brings forward none: we suspect none could be brought forward.

It is then *rational* language—the external manifestation, whether by sound or gesture, of general conceptions—which has to be considered. We have to ascertain whether or not its existence is, as far as the evidence goes, universal amongst mankind; also whether the lowest forms of speech discoverable are so much below the highest forms as to appear transitional steps from irrational cries, and, consequently, whether there is any positive evidence for the origin of speech by any process of evolution. It is not emotional expressions or the manifestations of sensible impressions which we have to consider, but the enunciations of distinct judgments as to "the what," "the how," and "the why," whether by sound or by gesture.

In the first place, perhaps it may be well to consider those speechless human beings now existing—the deaf-mutes. As to these Mr. Tylor tells us:—

Deaf-mutes.

> "Even in a low state of education, the deaf-mute seems to conceive general ideas, for when he invents a sign for anything he applies it to all other things of the same class, and he can also form abstract ideas in a certain way, or, at least, he knows that there is a quality in which snow and milk agree, and he can go on adding other white things, such as the moon and whitewash, to his list. He can form a proposition, for he can make us understand, and we can make him understand, that 'this man is old, that man is young.' Nor does he seem incapable of reasoning in something like a syllogism, even when he has no means of communicating but the gesture-language; and certainly as soon as he has learnt to read that 'all men are mortal, John is a man, therefore John is a mortal,' he will show by every means of illustration in his power that he fully comprehends the argument."*

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* 'Researches into the Early History of Mankind,' p. 66.

The intellectual activity of their minds is indeed evidenced by the peculiar construction of their sentences. Mr. Tylor tells us (p. 25): "Their usual construction is not 'black horse,' but 'horse black;' not 'bring a black hat,' but 'hat black bring;' not 'I am hungry, give me bread,' but 'hungry me bread give.'"* Thus we see how thoroughly mistaken Professor Huxley was when he asserted ('Man's Place in Nature,' p. 102, note): "A man born dumb, notwithstanding his great cerebral mass and his inheritance of strong intellectual instincts, would be capable of *few higher intellectual manifestations than an orang or a chimpanzee*, if he were confined to the society of his dumb associates." Quite contrary to this, there can be no doubt but that a society of dumb men would soon elaborate a gesture-language of great complexity.

Mr. Tylor on savages.

Passing now to savage men, Mr. Tylor makes some excellent remarks on, and brings forward a good example of, that reckless and unjust depreciation of native tribes of which travellers are so apt to be guilty, and of which we shall find other examples when we come to the subject of religion. A Mr. Mercer having said of the Veddah tribes of Ceylon that their communications have little resemblance to distinct sounds or systematised language, Mr. Tylor observes (p. 78):—

> "Mr. Mercer seems to have adopted the common view of foreigners about the Veddahs, but it has happened here, as in many other accounts of savage tribes, that closer acquaintance has shown them to have been wrongly accused. Mr. Bailey who has had good opportunities of studying them, . . . contradicts their supposed deficiency in language with the remark, 'I never knew one of them at a loss for words sufficiently intelligible to convey his meaning, not to his fellows only, but to the Singhalese of the neighbourhood, who are all more or less acquainted with the Veddah patois.'"

Again, as to another well-known traveller he remarks (p. 79):—

> "It is extremely likely that Madame Pfeiffer's savages suffered the

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* This spontaneous tendency may be pleaded in mitigation of De Candolle's strictures on Latin construction as unnatural.

> penalty of being set down as wanting in language, for no worse fault than using a combination of words and signs in order to make what they meant as clear as possible to her comprehension."

As to the universality of the *verbum mentale* in man he observes (p. 80):—

> "As the gesture-language is substantially the same among savage tribes all over the world, and also among children who cannot speak, so the picture-writings of savages are not only similar to one another, but are like what children make untaught even in civilised countries. Like the universal language of gestures, the art of picture-writing tends to prove that the mind of the uncultured man works in much the same way at all times and everywhere. . . . *Man* is essentially, what the derivation of his name among our Aryan race imports, not 'the speaker,' but he who thinks, he who *means*."

In other words, he is a *rational animal*. Mr. Tylor reinforces these remarks elsewhere * by saying:—

> "It always happens, in the study of the lower races, that the more means we have of understanding their thoughts, the more sense and reason do we find in them."

A great deal has been sometimes made of the alleged inability of some savages to count more than five, or even three, and this fact is occasionally advanced as pointing to a transition from the psychical powers of brutes to the intelligence of man. We shall return to this hereafter, but some fitting remarks by Mr. Tylor may be here quoted:—

> "Of course, it no more follows among savages than among ourselves, that because a man counts on his fingers his language must be wanting in words to express the number he wishes to reckon. For example, it was noticed that when natives of Kamskatka were set to count, they would reckon all their fingers, and then all their toes, getting up to 20, and then would ask, 'What are we to do next?' Yet it was found on examination that numbers up to 100 existed in their language."

Concerning the origin of existing articulate words, Mr. Tylor distinctly repudiates the "bow-wow hypothesis" as insufficient. For instance, with respect to the family of words represented by the Sanskrit *vad*, to go, the Latin *vado*, he says (*Ibid.* p. 195): "To this root there seems no sufficient ground for assigning an imitative origin, the traces of which it has at any rate lost if it ever had them." Again, as to early words he says (*Ibid.* p. 207): "It is obvious that the leading principle of their formation is not to adopt words distinguished by the expressive character of their sound, but to *choose* somehow a *fixed word* to answer a *given purpose*." As to the arbitrary way in which articulate words are used to express sounds, and the small amount of real resemblance existing between them, he tells us (*Ibid.* p. 182): "The Australian imitation of a spear or bullet striking is given as *toop;* to the Zulu when a calabash is beaten it says *boo*." He concludes (*Ibid.* p. 208):—

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* 'Primitive Culture,' vol. i. p. 322.

> "I do not think that the evidence here adduced justifies the setting up of what is called the Interjectional and Imitative theory as a complete solution of the problem of original language. Valid as this theory proves itself within limits, it would be incautious to accept a hypothesis which can, perhaps, satisfactorily account for a twentieth of the crude forms in any language, as a certain and absolute explanation of the nineteen-twentieths whose origin remains doubtful. . . . . Too narrow a theory of the application of sound to sense may fail to include the varied devices which the languages of different regions turn to account. It is thus with the distinction in meaning of a word by its musical accent, and the distinction of distance by graduated vowels. These are ingenious and intelligible [intellectual!] contrivances, but they hardly seem directly emotional or imitative in origin."

Thus it seems that Mr. Tylor is unable to bring forward any evidence of a speechless condition of man, but that he is constrained to admit all available evidence points in the opposite direction, and that it shows speech to be universal amongst existing races. Even those abnormal and unfortunate beings the deaf-mutes are seen to be intellectually endowed with language, so that they infinitely more resemble a man that is gagged than they do an irrational animal. The essential community intellectually existing between them and us is shown by our occasional use of what Mr. Tylor calls "picture words," where "a substantive is treated as the root or crude form of a verb," as e.g., "to *butter* bread, to *cudgel* a man, to *oil* machinery, to *pepper* a dish."

Sir John Lubbock.

As to *speech*, Sir John Lubbock at once admits:* "Although it has been at various times stated that certain savages are entirely without language, none of these accounts appeared to be well authenticated." The recklessness with which assertions are made about savage tribes is, as we shall shortly see, so great, that no account ought to be fully received without a knowledge of the bias of the relater and a careful criticism of his statements.

The assertions and admissions of Mr. Tylor and Sir John Lubbock are most valuable testimonies. They are most valuable, in the first place, on account of the industry, patience, ability, and candour with which these writers have amassed, digested, and laid before their readers all the most important facts which either archæology or ethnology has afforded, tending to throw light upon the lower stages of human existence. Secondly, however, they are of especial value because their authors belong to that school which adopts the monistic view as to man's origin—that is to say, the school of Lamarck, Darwin, Huxley, and Spencer. We may, therefore, confidently rely upon any statements or admissions made by Mr. Tylor and Sir John Lubbock which tell *against* that view which would confound intellect with emotion; while we may fairly assume, from the eminent qualities these authors possess, that when they fail to bring forward data *favourable* to that view it is because no such data in reality exist.

Conclusion.

It seems then unquestionable that an absolute difference exists in the matter of language between man and all other animals. While no brute gives any evidence of having any such faculty, it seems undeniable that all men possess that special bond and connexion between the world of mind and the world of matter—rational language. On the other hand, the signs of feelings and emotions, merely emotional language, are the common property of men and animals. Such appears to be the lesson we may gather from nature respecting those various signs, vocal, manual, or of whatever kind, which together constitute that which goes by the general term "language."

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* 'Origin of Civilisation,' p. 275.

CHAPTER V.

DUTY AND PLEASURE.

> "Perceptions of right and wrong, and of our power of choice, and consequent responsibility, are universally diffused amongst mankind, and constitute an absolute character separating man from all other animals."

The existence of moral conceptions a fact of nature.

THOSE investigators take a sadly incomplete view of nature who confine themselves to such sciences as zoology, botany, and physiology, even though, under the latter, the mere physical facts of language be included. The fundamentally distinct primary conceptions of the human mind form, no less than do physical facts, a part of nature, and one from which the most important lessons may be derived. Having, in the last chapter, noted the teaching of nature as respects the difference between emotional and rational language, we may now proceed to advert to a distinction which seems naturally to have arisen in the minds of all races of men, and to have expressed itself unmistakably in their speech. The distinction referred to is that between duty and pleasure, as implied in expressions of moral reprobation, indicating a conviction of the existence of moral responsibility and therefore of a power of choice exercised by men in their actions.

Are such conceptions universal amongst mankind?

We may begin by inquiring whether it is indeed the case that this conception of moral worth is as widespread as alleged—an inquiry, that is, concerning the universality or non-universality amongst mankind of a power of apprehending "right" or "wrong."

And here, again, it is necessary to distinguish and define what is meant by this human mental power, because ambiguity and misunderstanding respecting this matter are at least as common as in the matter of language. By this power is *not* meant merely a feeling of sympathy, a deference to the desires of others, or some emotional excitement tending to produce materially kind and benevolent actions. Still less is meant the volitional impulse which in all cases directly produces such action itself, since this may or may not be "moral," according to the circumstances of each case. What *is* meant is an intellectual activity evinced by the expression of definite judgments passed upon certain modes of action abstractedly considered. The existence of kindly social customs cannot be taken as necessarily proving the existence of such intellectual activity in the absence of some intimation by word or gesture of a moral apprehension. No preference for the interests of the tribe over self, or anger at the absence of such preference, is moral unless there is a judgment that such preference is "right." Similarly, no amount of gross or atrocious habits in any given tribe can be taken to prove the entire absence of morality. The liking or disliking (and therefore the frequent practice or neglect) of certain actions is one thing; the act of judging that such actions, whether pleasant or unpleasant, are "right" or "wrong" is an altogether different thing.

A definition of morality.

A man may, for instance, judge that he *ought* to renounce a tender friendship without its becoming less delightful to him to continue it. Another may perceive that he has acted *rightly* in foregoing a pecuniary advantage, though mentally suffering acute distress from the consequences of his just act. Again, differences of judgment as to the goodness or badness of particular concrete actions have nothing to do with the point we have to consider. Thus the most revolting act that can well be cited, that of the deliberate murder of aged parents, monstrous as the act in itself is, may really be one of filial piety if, as is asserted, the savage perpetrators do it at the wish of such parents themselves and from a conviction that thereby they not only save them from suffering in this world but also confer upon them prolonged happiness in the next. Hence we must judge of the moral or non-moral condition of savage tribes by their own declarations when these can be obtained or by expressive actions as far as possible the equivalent of such declarations. We have already seen the essential community of intellectual nature existing amongst all living races of men as regards the faculty of speech. From the existence of this community of nature, we may fairly conclude that deliberate articulate judgments of lower races have substantially the same meaning as those of our own race, whatever may be the concrete actions which occasion the expression of such abstract judgments.

The distinctness of the conception generally admitted.

We are all familiar with the constantly employed expressions denoting moral judgments amongst ourselves, and those amongst us who reflect upon the subject are generally aware that in asserting that anything is "right" they mean to make a judgment altogether distinct from one asserting the same thing to be pleasurable or advantageous. Even men who, like the late John Stuart Mill, assert that the principle regulating our actions should be the production of the greatest amount of pleasure to all sentient beings, must assert that there is either no obligation at all to accept this principle itself, or that such obligation is a "moral" one. The distinction being then generally and practically recognised as existing amongst ourselves, we have to examine the following points. Whether there is any evidence that moral perceptions are wanting in any savage tribes? Whether any races exist in a condition which may be considered as a transitional state between our own and the non-moral condition of beasts? Whether any peoples have their moral perceptions so perverted—so remote from those of the highest races—as to result in the formation of abstract judgments directly contradicting the abstract moral judgments of such highest races?

In this matter it is very necessary to be greatly on our guard against the involuntary misrepresentations and the hasty and careless misinterpretations of unskilled observers and inaccurate narrators. Sir John Lubbock himself observes:* "We all know how difficult it is to judge an individual, and it must be much more so to judge a nation. In fact, whether any given writer praises or blames a particular race, depends *at least as much on the character of the writer as on that of the people.*" Again, we must be careful not to apply to savage tribes standards applicable only to higher races. The essence of morality being the conformity of acts to an ethical ideal, neither the worst any more than the best moral development, whatever be the concrete acts, can co-exist with an undeveloped intellectual condition. If any tribes are intellectually in a puerile condition, puerile also must be their moral state. Here we may again quote Sir John Lubbock with approval. He says (p. 340):—

Needful cautions.

> "The lowest moral and the lowest intellectual condition are not only, in my opinion, not inseparable, they are not even compatible. . . . The lower races of men may be, and are, vicious; but allowances must be made for them. On the contrary (*corruptio optimi pessima est*), the higher the mental power, the more splendid the intellectual endowment, the deeper is the moral degradation of him who wastes the one and abuses the other."

Examples of morality in savages.

Now, one of the clearest ethical judgments is that as to "justice" and "injustice;" and by common consent the native Australians are admitted to be at about the lowest level of existing social development, while as we have seen, the Esquimaux are deemed by some to be surviving specimens of the (up to the present time hypothetical) "miocene men."

Concerning the first of these races, the Australians, Sir John Lubbock tells us:—

> "The amount of legal revenge, if I may so call it, is often strictly regulated, even where we should least expect to find such limitations. Thus, in Australia, crimes may be compounded for by the criminal appearing and submitting himself to the ordeal of having spears

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* 'Origin of Civilisation,' p. 259.

> thrown at him by all such persons as conceive themselves to have been aggrieved, or by permitting spears to be thrust through certain parts of his body; such as through the thigh, or the calf of the leg, or under the arm. The part which is to be pierced by a spear is fixed for all common crimes, and a native who has incurred this penalty sometimes quietly holds out his leg for the injured party to thrust his spear through! So strictly is the amount of punishment limited, that if, in inflicting such spear wounds, a man, either through carelessness or from any other cause, exceeded the recognised limits—if, for instance, he wounded the femoral artery—he would in his turn become liable to punishment."—*Origin of Civilisation*, p. 318.

The next is a yet stronger example of savage refinement, furnished us by Sir John Lubbock:—

> "Among the Greenlanders, should a seal escape with a hunter's javelin in it, and be killed by another man afterwards, it belongs to the former. But if the seal is struck with the harpoon and bladder, and the string breaks, the hunter loses his right. If a man finds a seal dead, with a harpoon in it, he keeps the seal but returns the harpoon. . . . . Any man who finds a piece of drift-wood can appropriate it by placing a stone on it, as a sign that some one has taken possession of it. No other Greenlander will then touch it."—*Ibid.* p. 305.

But perhaps the recently extinct Tasmanians were at a lower level than the Australians. If so, Mr. Tylor shows us by a legend which he relates, that they had a strong appreciation of even *male* conjugal fidelity. The inhabitants of Tierra del Fuego are, if possible, more wretched savages than the Australians, yet it is very interesting to note that even with respect to these no less hostile a witness than Mr. Darwin himself informs us that when a certain Mr. Bynoe shot some very young ducklings as specimens, a Fuegian declared, in the most solemn manner, "Oh, Mr. Bynoe! much rain, snow, blow much!" And as to this declaration, Mr. Darwin tells us that the anticipated bad weather "was evidently a retributive punishment for wasting human food," i.e., for a transgression of the aborted moral code recognised by the Fuegian in question.

That the language of savage tribes is capable of expressing moral conceptions will probably be contested by no one. Similarly, no one will probably deny that when a savage emphatically calls "bad" an act of treachery done to himself by one to whom he has been kind, his mind recognises, at least in a rudimentary way, an element of *ingratitude* in such an action. But, in fact, that identity of intellectual nature, fundamentally considered, which we have found to exist in all men as the necessary accompaniment of language, at once establishes a very strong *à priori* probability in favour of a similar universality as to the power of apprehending good and evil. The *onus probandi* lies clearly with those who deny it, and yet not only are even Mr. Tylor and Sir John Lubbock unable to bring forward facts capable of establishing the existence of a non-moral race of men, but they bring forward instances and announce conclusions of an opposite character. Mr. Tylor observes:—

> "Glancing down the moral scale amongst mankind at large, we find *no* tribe standing at or near zero. The asserted existence of savages so low as to have no moral standard is *too groundless to be discussed.* Every human tribe has its general views as to what conduct is right and what wrong, and each generation hands the standard on to the next. Even in the details of those moral standards, wide as their differences are, there is a yet wider agreement throughout the human race. . . . . No known tribe, however low and ferocious, has ever admitted that men may kill one another indiscriminately. . . . . The Sioux Indians, among themselves, hold manslaughter, unless by way of blood revenge, to be a crime, and the Dayaks also punish murder."—*Contemporary Review,* April 1873, pp. 702, 714.

In another place,* Mr. Tylor, after showing different early conditions of the tenure of property and the occasional estimation of the tribe as the social unit, &c., adds:—"Their various grades of culture had each according to its lights its standard of right and wrong, and they are to be judged on the criterion whether they did well or ill according to this standard." There being thus no question as to the non-existence of any non-moral race of men, can we find evidence of any transitional stage? But the difference between moral and non-moral existence is a difference of *kind*, and therefore "transitions" are here no more possible than between articulate sound-giving animals which have not reason and articulate sound-giving animals who have it.

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* 'Contemporary Review,' June 1873, p. 72.

Mr. Tylor and Sir John Lubbock.

It may be replied, however, that Sir John Lubbock and Mr. Tylor at least believe in the natural and gradual development of man from the non-moral to the moral mode of existence, and that therefore the facts cited cannot have the force here attributed to them. To this it must be answered that the faculty of accumulating many facts, or that of arranging and presenting them in a perspicuous and persuasive manner, by no means necessarily carries with it a faculty of understanding what those facts really teach. That such an assertion of intellectual deficiency may not repose upon the mere *ipse dixit* of the present writer, it may be well to quote the judgment of one who is himself a master in those archæological subjects in which Sir John Lubbock is such a proficient, while he is also a most distinguished biologist and a man of universal culture. Professor Rolleston upon this subject remarks* as follows:—

> "It is strange, indeed, that Sir John Lubbock *does not see* how his method of accounting for the genesis of the notions of right and wrong, like that of all other utilitarians, *actually presupposes their existence!* How could the old men 'praise' or 'condemn' except by reference to some pre-existing standard of right and wrong? How could the parties injured by the violation of a compact 'naturally condemn' it except by a tacit or articulate reference to some 'naturally implanted,' or, at all events, to some already existing, standard of virtue and vice? Language, which in matters of this kind faithfully reproduces the existence of feelings, and even to some extent the history of our race, will not lend itself to the support of their theories, and gives the Dialectician for once a real victory over the Natural Historian. . . . . We must also express our surprise that Sir John Lubbock should not have drawn attention to the difficulty which in early stages of our history must have beset the collection of those 'experiences of utility,' of which Mr. Herbert Spencer speaks as the foundation of our so-called moral intuitions; and, secondly, to the exceeding

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* The italics are not Professor Rolleston's.

unfitness of the 'nervous organisation,' which Mr. Huxley calls 'the thoughtless brains,' of a savage, to act as a storehouse for such experiences when obtained. For, firstly, the wicked often remain in a state of great prosperity for periods commensurate with the lifetime of an entire population of civilised, not to speak of the notoriously shorter-lived savage, men; and a life-long experience would neutralise the results, not merely of tradition, but of hereditary transmission. And, secondly, as Sir John Lubbock himself tells us (p. 70), with reference to the practice of infanticide, the 'distinction between the sexes implies an amount of forethought and prudence which the lower races of men do not possess.' We commend this estimate of the faculties and capacities of our ancestors to the careful consideration of those philosophers who suppose them to have been capable of processes of stock-taking, which must, *ex hypothesi*, have enabled them to anticipate the epigram, 'Honesty is the best policy.'"—*The Academy*, Nov. 15, 1870.

I have thus Professor Rolleston on my side when I assert that it is impossible to account for the natural development of a moral power of judgment, without, in fact, presupposing its actual existence—since such judgment cannot exist without an ethical standard, and such standard cannot exist without an ethical judgment.

Do moral judgments contradict one another?

The third question, then, now alone remains: namely, whether the moral perceptions of any people are so perverted as to directly contradict our own abstract moral judgments. In the words of Mr. Lecky:*—"It is not to be expected, it is not to be maintained, that men in all ages should have agreed about the application of their moral principles. All that is contended for is that these principles are themselves the same . . . . in fact, that, however these principles might be applied, "still humanity was recognised as a virtue, and cruelty as a vice."† But if opponents have been unable to bring instances to show the existence of a non-moral race, still less can they prove that of one the moral principles of which are

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* 'Morals,' vol. i. p. 104.

† Mr. Lecky (*op. cit.* p. 105) gives some interesting quotations from Helvetius, 'De l'Esprit,' vol. ii. p. 13, to show how practices which are at first glaringly immoral come, when fully understood, to appear relatively moral, and a positive improvement upon other customs they have displaced.

inverted. Let thieving be here and there encouraged and taught, yet dishonesty is nowhere erected into a principle, but is reprobated in the very maxim "honour amongst thieves." Frightful cruelty towards prisoners was practised by the North American Indians, but it was towards *prisoners*, and cruelty was never inculcated as an ideal to be always aimed at so that remorse of conscience should be felt by any man who happened to have let slip a possible opportunity of cruelty towards any one. As another writer has well expressed it:[*]—"Many men doubtless in various times and places have thought it right to do many an act which we know to be unjust; still they have never thought it right *because* unjust; they have never thought it right for the sake of any virtuousness which they have supposed to reside in injustice; but because of the virtuousness of *beneficence*, or *gratitude*, or the like. Similarly, many men think an act wrong, because they think it unjust; but they never think it wrong because they think it *just.*"

We may then safely conclude that there exists no evidence whatever yet discovered for the existence of races either non-moral or with a really inverted morality, or for the evolution of a "moral state" from a brutal, non-moral condition of mankind.

The popular modern school implicitly denies morality.

All men who follow the school of thought advocated by John Stuart Mill, Herbert Spencer, Winwood Reade, Huxley, Vogt, Tyndall, and Lewes, assert, and must assert, that in spite of the *present* difference between the ideas of "pleasure" and "duty" they are, nevertheless, one as to their origin—an origin consisting ultimately of pleasurable and painful sensations. Moral conceptions, they say, have been evolved from pleasurable sensations by the preservation, through long ages (in the struggle for life), of a predominating number of such individuals as happened to have a natural and spontaneous liking for practices and habits of mind useful to their tribe or race, and that the same action has destroyed a predominating number of those individuals who possessed a marked tendency to contrary practices. The descendants of individuals so preserved have, they say, come to inherit such a liking and such useful habits of mind, and at last (finding this inherited tendency thus existing in themselves, distinct from their tendency to conscious self-gratification) have become apt to regard it as fundamentally distinct, *innate*, and independent of all experience. In fact, according to this school, the idea of "right" is only the result of the gradual accretion of useful predilections which, from time to time, arose in a series of ancestors naturally selected. In this way "morality" is, as it were, the congealed past experience of the race, and "virtue" becomes,* as it were, *a sort of "retrieving,"* which the thus improved human animal practises by a perfected and inherited habit, regardless of self-gratification, just as the brute animal has acquired the habit of seeking prey and bringing it to his master, instead of devouring it himself.

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[*] 'Dublin Review,' January 1872, p. 65.

Mr. John Stuart Mill's self-contradiction in this matter.

Mr. John Stuart Mill has very amusingly and instructively (though, of course, quite unintentionally) shown us how radically distinct even in his own mind are the two ideas, which he nevertheless endeavours to identify. In his examination of 'Sir William Hamilton's Philosophy,' he says: "If I am informed that the world is ruled by a being whose attributes are infinite, but what they are we cannot learn, nor what the principles of his government, except that 'the highest human morality which we are capable of conceiving' does not sanction them; convince me of it, and I will bear my fate as I may. But when I am told that I must believe this, and at the same time call this being by the names which express and affirm the highest human morality, I say in plain terms that I will not. Whatever power such a being may have over me, there is one thing which he shall not do; he shall not compel me to worship him. I will call no being good who is not what I mean when I apply that epithet to my fellow-creatures; and if such a being can sentence me to hell, to hell I will go."

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* This was pointed out in the 'Genesis of Species' (Macmillan), 2nd edition, p. 213.

This is unquestionably an admirable sentiment on the part of Mr. Mill (with which every absolute moralist will agree), but it contains a complete refutation of his own position, and is a capital instance of the vigorous life of moral intuition in one who professes to have eliminated any fundamental distinction between the "right" and the "expedient." For if an action is morally good, and to be done merely in proportion to the amount of pleasure it secures, and morally bad, and to be avoided as tending to misery, and if it could be *proved* that by calling God good—whether He is so or not in our sense of the term—we could secure a maximum of pleasure, and by refusing to do so we should incur endless torment, clearly, on utilitarian principles, the flattery would be good. Mr. Mill, of course, must also mean that in the matter in question all men would do well to act with him. Therefore he must mean that it would be well for all to accept (on the hypothesis above given) infinite and final misery for all as the result of the pursuit of happiness as the only end.

It must be recollected that in consenting to worship this unholy God, Mr. Mill is not asked to do harm to his neighbour, so that his refusal reposes simply on his perception of the immorality of the requisition.

It is also noteworthy that an omnipotent Deity is supposed incapable of altering Mr. Mill's mind and moral perceptions!

Mr. Mill's decision is right, but it is difficult indeed to see how, without the recognition of an "absolute morality," he can justify so utter and final an abandonment of all utility in favour of a clear moral perception.

These two ideas, the "right" and the "useful," being so distinct, a greater difficulty meets us with regard to their origin from some common source than could arise from merely considering difficulties as

The origin of the conception "right."

to the incipient stages of our bodily structures. For the distinction between the "right" and the "useful" is so fundamental and essential that not only does the idea of benefit not enter into the idea of duty, but we see that the very fact of an act *not* being beneficial to us makes it the more praiseworthy, while gain tends to diminish the merit of an action. Yet this idea, "right," thus excluding, as it does, all reference to utility or pleasure, has nevertheless to be constructed and evolved from utility and pleasure, and ultimately from pleasurable sensations, if we are to accept pure Darwinianism: if we are to accept, that is, the evolution of man's psychical nature and highest powers by the exclusive action of "Natural Selection" from such faculties as are possessed by brutes; in other words, if we are to believe that the conceptions of the highest human morality arose through minute and fortuitous variations of brutal desires and appetites, in all conceivable directions.

It is here contended, on the other hand, that no conservation of any such variations could ever have given rise to the faintest beginning of any such moral perceptions; that by "Natural Selection" alone the maxim *fiat justitia, ruat cœlum* could not have been excogitated, still less have found a widespread acceptance; that it is impotent to suggest even an approach towards an explanation of the *first beginning* of the idea of "right." It need hardly be remarked that acts may be distinguished not only as pleasurable, useful, or beautiful, but also as good, in two different senses; (1) *materially* moral acts, and (2) acts which are *formally* moral. The first are acts good in themselves. *as acts*, apart from any intention of the agent which may or may not have been directed towards the right. The second are acts which are good not only in themselves as acts, but also in the deliberate *intention* of the agent who recognises his actions as being "right." Thus, acts may be *materially* moral or immoral in a very high degree, without being in the least *formally* so. For example, a person may tend and minister to a sick man with scrupulous care and exactness,

Materially and formally moral acts.

having in view all the time nothing but the future reception of a good legacy. Another may, in the dark, shoot his own father, taking him to be an assassin, and so commit what is *materially* an act of parricide, though *formally* it is only an act of self-defence of more or less culpable rashness. A woman may innocently, because ignorantly, marry a married man, and so commit a *material* act of adultery. She may discover the facts, and persist, and so make her act *formal* also.

Actions of brutes, such as those of the bee, the ant, or the beaver, however materially good as regards their relation to the community to which such animals belong, are absolutely destitute of the most incipient degree of real, i.e., formal "goodness," because unaccompanied by mental acts of conscious will directed towards the fulfilment of duty.

Mr. Darwin's views.

Mr. Darwin does not hesitate to declare distinctly that the "moral sense" is but a mere result of the development of brutal instincts. He maintains, "the first foundation or origin of the moral sense lies in the social instincts, including sympathy; and these instincts no doubt were primarily gained, as in the case of the lower animals, through natural selection" ('Descent of Man,' vol. ii. p. 394).

Everything, however, depends upon what we mean by the "moral sense." It is a patent fact that there does exist a perception of the qualities "right" and "wrong" attaching to certain actions. However arising, men have a consciousness of an absolute and immutable rule *legitimately* claiming obedience with an authority necessarily supreme and absolute—in other words, intellectual judgments are formed which imply the existence of an ethical idea in the judging mind.

It is, as has been already said, the existence of this power which has to be accounted for; neither its application nor even its validity have to be considered. Yet instances of difference of opinion respecting the moral value of particular concrete actions are often brought forward as if they could disprove the *existence* of moral intuition. Such instances are utterly beside the question. It is amply sufficient for our purpose if it be conceded that developed reason dictates to us that certain modes of action, abstractedly considered, are intrinsically wrong; and this we believe to be indisputable.

It can hardly be too often insisted on that it is equally beside the question to show that the existence of mutually beneficial acts and of altruistic habits can be explained by "natural selection." No amount of benevolent habits tend even in the remotest degree to account for the intellectual perception of "right" and "duty." Such habits may make the doing of beneficial acts pleasant, and their omission painful; but such feelings have essentially nothing whatever to do with the perception of "right" and "wrong," nor will the faintest incipient stage of the perception be accounted for by the strongest development of such sympathetic feelings. Liking to do acts which happen to be good is one thing; seeing that actions are good, whether we or others like them or not, is quite another.

That moral perceptions are simply the more enduring instincts.

Mr. Darwin's account of the moral sense is very different from the above. It may be expressed most briefly by saying that it is the prevalence of more enduring instincts over less persistent ones—the former being social instincts, the latter personal ones. He tells us:—

> "As man cannot prevent old impressions continually repassing through his mind, he will be compelled to compare the weaker impressions of, for instance, past hunger, or of vengeance satisfied or danger avoided at the cost of other men, with the instinct of sympathy and goodwill to his fellows, which is still present and ever in some degree active in his mind. He will then feel in his imagination that a stronger instinct has yielded to one which now seems comparatively weak; and then that sense of dissatisfaction will inevitably be felt with which man is endowed, like every other animal, in order that his instincts may be obeyed."—Vol. i. p. 90.

Mr. Darwin then means by "the moral sense" an instinct, and adds, truly enough, that "the very essence of an instinct is, that it is followed independently of reason" (vol. i. p. 100).

But the very essence of moral action is that it is *not* followed independently of reason.

When Mr. Darwin says,* "For my part I would as soon be descended from that heroic little monkey, &c., as from a savage who delights to torture his enemies, offers up bloody sacrifices, &c., and is haunted by the grossest superstitions," it only shows that he has not even the faintest conception of what a "moral nature" is.

Having stated our wide divergence from Mr. Darwin with respect to what the term "moral sense" denotes, we might be dispensed from criticising instances which must from our point of view be irrelevant, as Mr. Darwin would probably admit. Nevertheless, let us examine a few of these instances, and see if we can discover in them any justification of the views he propounds.

As illustrations of the development of self-reproach for the neglect of some good action, he observes:— Mr. Darwin's instances.

> "A young pointer, when it first scents game, apparently cannot help pointing. A squirrel in a cage who pats the nuts which it cannot eat, as if to bury them in the ground, can hardly be thought to act thus either from pleasure or pain. Hence the common assumption that men must be impelled to every action by experiencing some pleasure or pain may be erroneous. Although a habit may be blindly and implicitly followed, independently of any pleasure or pain felt at the moment, yet if it be forcibly and abruptly checked, a vague sense of dissatisfaction is generally experienced; and this is especially true in regard to persons of feeble intellect."—Vol. i. p. 80.

Now, passing over the question whether in the "pointing" and "patting" referred to there may not be some agreeable sensations, we contend that such instincts have nothing to do with "morality," from their blind nature, such blindness simply *ipso facto* eliminating every vestige of morality from an action.

Mr. Darwin certainly exaggerates the force and extent of social sympathetic feelings. Mr. Mill admits that they are

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* 'Descent of Man,' vol. ii. p. 404.

"often wanting;" but Mr. Darwin claims the conscious possession of such feelings for all, and quotes Hume as saying that the view of the happiness of others "communicates a secret joy," while the appearance of their misery "throws a melancholy damp over the imagination." * One might wish that this remark were universally true, but unfortunately some men take pleasure in the pain of others; and Larochefoucauld even ventured on the now well-known saying, "that there is something in the misfortunes of our best friends not unpleasant to us." But our feeling that the sufferings of others are pleasant or unpleasant has nothing to do with the question, which refers to the *judgment* whether the indulging of such feelings is "right" or "wrong."

If the "social instinct" were the real basis of the moral sense, the fact that society approved of anything would be recognised as the supreme sanction of it. Not only, however, is this not so, not only do we judge as to whether society in certain cases is right or wrong, but we demand a reason why we should obey society at all; we demand a rational basis and justification for social claims, if we happen to have a somewhat inquiring turn of mind. We shall be sure avowedly or secretly to despise and neglect the performance of acts which we do not happen to desire, and which have not an intellectual sanction.

The only passage in which our author seems as if about to meet the real question at issue is very disappointing, as the difficulty is merely evaded. He remarks: "I am aware that some persons maintain that actions performed impulsively do not come under the dominion of the moral sense, and cannot be called moral" (vol. i. p. 87). This is not a correct statement of the intuitive view, and the difficulty is evaded thus: "But it appears scarcely possible to draw any clear line of distinction of this kind, though the distinction may be real!" It seems to us, however, that there is no difficulty at all in drawing a line between a judgment as to an action being right or wrong and every other kind of mental act. Mr. Darwin goes on to say:—

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* 'Inquiry concerning the Principles of Morals,' edit. 1751, p. 132.

> "Moreover, an action repeatedly performed by us, will at last be done without deliberation or hesitation, and can then hardly be distinguished from an instinct; yet surely no one will pretend that an action thus done ceases to be moral. On the contrary, we all feel that an act cannot be considered as perfect, or as performed in the most noble manner, unless it is done impulsively, without deliberation or effort, in the same manner as by a man in whom the requisite qualities are innate."—Vol. i. p. 88.

To this must be replied, in one sense, "Yes;" in another, "No." An action which has ceased to be directly or indirectly deliberate has ceased to be moral as a distinct act, but it is moral as the continuation of those preceding deliberate acts through which the good habit was originally formed, and the rapidity with which the will is directed in the case supposed may indicate the number and constancy of antecedent meritorious volitions. Mr. Darwin seems to see this more or less, as he adds: "He who is forced to overcome his fear or want of sympathy before he acts, deserves, however, in one way higher credit than the man whose innate disposition leads him to a good act without effort."

Mr. Darwin gives as an illustration of the genesis of remorse,

> "of a temporary though for the time strongly persistent instinct conquering another instinct which is usually dominant over all others," the case of Swallows, which "at the proper season seem all day long to be impressed with the desire to migrate; their habits change; they become restless, are noisy, and congregate in flocks. Whilst the mother-bird is feeding or brooding over her nestlings, the maternal instinct is probably stronger than the migratory; but the instinct which is more persistent gains the victory, and at last, at a moment when her young ones are not in sight, she takes flight and deserts them. When arrived at the end of her long journey, and the migratory instinct ceases to act, what an agony of remorse each bird would feel, if, from being endowed with great mental activity, she could not prevent the image continually passing before her mind of her young ones perishing in the bleak north from cold and hunger."—Vol. i. p. 90.

Let us suppose she does suffer "agony," that feeling would be nothing to the purpose. What is requisite is that she shall judge that she *ought not* to have left them. To make clear our point, let us imagine a man formerly entangled in ties of affection which in justice to another his conscience has induced him to sever. The image of the distress his act of severance has caused may occasion him keen emotional suffering for years, accompanied by a clear perception that his act has been right. Again, let us suppose another case: The struggling father of a family becomes aware that the property on which he lives really belongs to another, and he relinquishes it. He may continue to judge that he has done a proper action, whilst tortured by the trials in which his act of justice has involved him. To assert that these acts are merely instinctive would be absurdly false. In the cases supposed, obedience is paid to a clear intellectual perception and against the very strongest instincts.

Mr. Darwin objects to the belief that the word "ought" means more than "the consciousness of the existence of a persistent instinct," the fact that we say "hounds ought to hunt," &c. But in fact when we so judge of them, we mean that they do not *fulfil* their *end* as hounds or pointers if they fail. The case of a Chinese convert, who, against his life-long training and the universal opinion of his fellows, elects a life of self-denial ending in martyrdom, is one of a kind not included in Mr. Darwin's provisions.

That we have not misrepresented Mr. Darwin's exposition of "conscience" is manifest. He says that if a man has gratified a passing instinct, to the neglect of an enduring instinct, he "will then feel dissatisfied with himself, and will resolve with more or less force to act differently for the future. This is conscience; for conscience looks backwards and judges past actions, inducing that kind of dissatisfaction, which if weak we call regret, and if severe remorse" (vol. i. p. 91). "Conscience" certainly "looks back and judges," but not all that "looks back and judges" is "conscience." A judgment of conscience is one of a particular kind, namely, a judgment according to the standard of moral worth. But for this, a *gourmand*, suffering after dinner from dyspepsia might exercise his conscience in looking back and judging with dissatisfaction that he had eaten the wrong sauce.

Indeed, elsewhere (vol. i. p. 103) Mr. Darwin speaks of "the standard of morality rising higher and higher," though he nowhere explains what he means either by the "standard" or by the "higher;" and, indeed, it is very difficult to understand what can possibly be meant by this "rising of the standard," if the "standard" is from first to last pleasure and profit.

About sympathy for suffering he says: "Nor could we check our sympathy, if so urged by hard reason, without deterioration in the *noblest* part of our nature." But it may well be asked, why and how noblest?

We find, again, the singular remark: "If any desire or instinct leading to an action opposed to the good of others, still appears to a man, when recalled to mind, as strong as or stronger than his social instinct, he will feel no keen regret at having followed it" (vol. i. p. 92).

Of Indians, he says (vol. i. p. 99): "It would be difficult to distinguish between the remorse felt by a Hindoo who has eaten unclean food, from that felt after committing a theft." Very likely so, for it would be difficult to say which act would, in him, be the more culpable.

Mr. Darwin is continually mistaking a merely beneficial action for a moral one; but, as before said, it is one thing to *act well*, and quite another to be a moral agent. A dog or even a fruit-tree may act well, but neither is a moral agent. Of course, all the instances he brings forward with regard to animals are not in point, on account of this misconception of the problem to be solved. He gives, however, some examples which tell strongly against his own view. Thus, he remarks of the *Law of Honour*: "The breach of this law, even when the breach is known to be strictly accordant with true morality, has caused many a man more agony than a real crime. We recognise the same influence in the sense of burning shame which most of us have felt, even after the interval of years, when calling to mind some accidental breach of a trifling, though fixed, rule of etiquette" (vol. i. p. 92). This is most true; some trifling breach of good manners may indeed occasion us pain; but this may be unaccompanied by a judgment that we are morally blameworthy. It is judgment, and not feeling, which has to do with right and wrong. But a yet better example might be given. What quality can have been more universally useful to social communities than courage? It has always been, and is still, greatly admired and highly appreciated, and is especially adapted, both directly and indirectly, to enable its possessors to become the fathers of succeeding generations. If the social instinct were the basis of the moral sense, it is infallibly certain that courage must have come to be regarded as supremely "good," and cowardice to be deserving of the deepest moral condemnation. And yet what is the fact? A coward feels probably self-contempt and that he has incurred the contempt of his associates, but he does not feel "wicked." He is painfully conscious of his defective organisation, but he knows that an organisation, however defective, cannot in itself constitute moral demerit. Similarly, we, the observers, despise, avoid, or hate a coward; but we can clearly understand that a coward may be a more virtuous man than another who abounds in animal courage.

The better still to show how completely distinct are the conceptions "enduring or strong instincts" and "virtuous desires" on the one hand, and "transient or weak impulses" and "vicious inclinations" on the other, let us substitute in the following passage for the words which Mr. Darwin, on his own principles, illegitimately introduces, others which accord with those principles, and we shall see how such substitution eliminates every element of morality from the passage:—

"Looking to future generations, there is no cause to fear that the social instincts will grow weaker, and we may expect that enduring [virtuous] habits will grow stronger, becoming perhaps fixed by inheritance. In this case the struggle between our stronger [higher] and weaker [lower] impulses will be less severe, and the strong [virtue] will be triumphant" (vol. i. p. 104).

As to past generations, Mr. Darwin tells us (vol. i. p. 166) that at all times throughout the world tribes have supplanted other tribes; and as social acts are an element in their success, sociality must have been intensified, and this because "an increase in the number of well-endowed men will certainly give an immense advantage to one tribe over another." No doubt! but this only explains an augmentation of mutually beneficial actions. It does not in the least even tend to explain how the moral judgment was first formed.

Our author again and again uses words, which are only explicable on the intuitive view, as if they required no explanation whatever. Thus (vol. i. p. 101) he speaks of a certain virtue as being "one of the *noblest* with which man is endowed," and says that "the *highest* stage in moral culture at which we can arrive is when we recognise that we ought to control our thoughts."* But, according to Mr. Darwin, the moral sense is the predominance of one instinct over another in intensity or duration. Here there is no room for any element of quality, and for him to introduce such is, in fact, to abandon his position. In the words of Mr. Grote (p. 83) —"What is it, then, that thus, distinct from duration and intensity of enjoyment, makes one sort of happiness more desirable, worthier, worth more than another? . . . . it is a third dimension of happiness besides intensity and duration, and far the most important of the three." And again (p. 125)—"When we find such language . . . . in the mouths of impugners of a supposed intuitivist philosophy, we are at first probably led to think whether such a philosophy be not what 'expellas furca, tamen usque recurret' . . . . and . . . . 'we may conclude that we cannot write many consecutive words upon a moral subject without involving' a higher philosophy."

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* Mr. Darwin quotes Marcus Aurelius; he might have quoted an older and more venerable authority.

In concluding what I have to say relative to Mr. Darwin's conception and explanation of the moral sense (namely, that its first foundation and origin lies in the social instincts, including sympathy, themselves gained primarily through natural selection),* I may quote some observations made by Mr. Hutton.† He says that, supposing the moral nature of man to have been simply evolved from brutes, "the moral nature must, then, be wholly determined by the physical agencies in which it is reared. And to suppose that they could give a power of self-determination of which they are not themselves possessed, or issue in a sense of obligation, when they are a mere bundle of helpless forces, is to suppose nature at once free and servile, vigilant and asleep."

The notions that the distinct, deliberate, reflective, representative powers of the mind are essentially the same as the mere indeliberate, presentative faculties; and that the gregarious instincts of a brute are fundamentally one with our moral intuitions, is open to another of Mr. Hutton's excellent remarks (vol. i. p. 47):—"Nothing is less scientific than any hypothesis which tries to run one set of facts into another without justification, in order to evade the admission of a distinct root. Instead of increasing our means of representing the universe, such a procedure confines and disturbs them," and "the problem of all atheistic philosophers has been, not to find the *real* ultimate link between the different classes of natural force and life, but to soften away as much as possible the one into the other, so as to make the transition imperceptible, and so introduce a thoroughly new creative force, *as if* it were but an expansion of that beneath it" (p. 51).

It would not be impossible, however, to modify this expression of Mr. Darwin's views, so as to make them harmonise with our ethical perceptions. If he were to say that a moral First Cause had so ordered events that the right and the expedient in the main coincide, and thus virtue and happiness are so far (though very imperfectly) conjoined here as to reasonably lead us to look forward to their complete union hereafter; and if he were further to add that such a Cause, having implanted in man the unanalysable power of perceiving moral obligation, had made use of the lower faculties, and amongst them social instincts, as occasions to call out into action and develop this power, then his hypothesis would not be manifestly inadequate, as it is. But, unfortunately, this is not on the face of it his teaching. We are referred for the "origin of morals" to the same source to which he before believed that he had traced the "origin of species." He says:*—"The first foundation or origin of the moral sense lies in the social instincts, including sympathy; and these instincts, no doubt, were primarily gained, as in the case of the lower animals, through natural selection."

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* 'Descent of Man,' vol. i. p. 394.
† 'Essays,' vol. i. p. 43.

Mr. Huxley's reply to Mr. Darwin's critics.

Criticisms on Mr. Darwin such as the foregoing—criticisms of mine which appeared in the 'Genesis of Species' and the 'Quarterly Review'—elicited from Professor Huxley a very interesting reply, which appeared in the 'Contemporary Review' for Nov. 1871.

As to this reply, I have now, and shall have later on, various observations to offer of very different kinds.

But first, as to the question concerning morality I have, I conceive, some reason to complain of Professor Huxley's treatment of my observations. From the remarks which he has again and again made, it is evident to whom he attributes the article in the 'Quarterly Review.' Nevertheless he, in the first place, misrepresents my statement in my book, and attributes to me an absurdity which is not in it, but which is distinctly pointed out and repudiated in the 'Quarterly Review.' In the second place, he accuses me of neglecting a remark made by Mr. Darwin, which remark is not only referred to, but fully quoted in the same review.

First, with regard to Mr. Darwin: Professor Huxley accuses me of charging that gentleman "with being ignorant of the distinction between material and formal goodness," though Mr. Darwin himself "discusses the very question at issue in a passage, well worth reading, and also comes to a conclusion opposed to Mr. Mivart's axiom." As I have said, this passage is not only referred to, but quoted in the 'Quarterly Review.' In that passage, however, Mr. Darwin, though he notices, gives no evidence of fully understanding my distinction, nor, though he notices an objection, does he meet the difficulty in the least. Professor Huxley seems to think that because Mr. Darwin has *referred to* an objection, that that objection has thereby *lost its force.* The objection, however, has not been refuted either by Mr. Darwin or Professor Huxley, and hence it becomes probable that, as I am convinced is the case, it *cannot be refuted.*

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* 'Descent of Man,' vol. ii. p 394.

We will turn now to the more serious misrepresentation of which I have to complain. My critic exhibits me as committing the absurdity of maintaining that no act can be "good" unless it is done with deliberate and actual advertence in every instance—as if I thought that a man must stand still, consider and reflect in each case in order to perform a meritorious action. He also implies that I am so unreasonable as to deny "merit" to actions done unreflectingly and spontaneously from the love of God or one's neighbour.

What I assert, however, is, that for an act to be "good" it must be really directed by the doer to a good end, either actually or virtually. The idea of good, which he has in the past apprehended, must be influencing the man at the time, whether he adverts to it or not, otherwise the action is not moral. The merit of that virtue which shows itself even in the spontaneous, indeliberate actions of a good man, results from the fact of previous acts having been consciously directed to goodness, by which a habit has been formed. The more thoroughly a man is possessed by the idea of goodness, the more his whole being is saturated with that idea, the more will goodness show itself in all his even spontaneous actions, which thus will have additional merit through their very spontaneity. Now this was actually expressed in the

'Quarterly Review,' where of such an act it is stated that "it is moral as the continuation of those preceding deliberate acts through which the good habit was originally formed; and the rapidity with which the will is directed in the case supposed may indicate the number and constancy of antecedent meritorious actions." Not only, however, does Professor Huxley avoid notice of this passage, but he quotes my words as to the unmeritorious nature of actions "unaccompanied by mental acts of conscious will directed towards the fulfilment of duty," so as to lead his readers to believe that I say this absolutely. He takes care not to let them know that here I am speaking * only of the "actions of brutes, such as those of the bee, the ant, or the beaver," which, of course, never at any period of the lives of any one of these creatures were consciously directed to "goodness" or "duty" as an end, so that no later spontaneous actions could in their case result from an acquired habit of virtue, on which account I was fully justified in speaking of their actions as devoid of morality. This misrepresentation is noteworthy; but what is surprising in one whose eulogies of "honesty" are so warm and so repeated is, that the whole passage has been reprinted *totidem verbis* in his 'Critiques and Addresses,' after having had his attention directly called to the injustice he had committed.

Professor Huxley speaks of "the most beautiful character to which humanity can attain, that of the man who does good without thinking about it" (p. 468). Does he mean that the absence of thought is the cause of the beauty? If so, then if I do the most beneficial acts in my sleep, I attain this apex of moral beauty. This, of course, he will not allow. Therefore, it is not by reason of the not thinking about it that the action is beautiful, but, as Professor Huxley goes on to say, because its author "loves justice and is repelled by evil." In this last point, then—in this habit of mind, the beauty consists. But will the Professor say that the man got himself into this state without previous acts of conscious will? Can a man love justice without being able to distinguish between the just and unjust? If he loves moral beauty, must he not *know* it?

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* See 'Genesis of Species,' p. 221, 2nd edition.

I would fain believe that Professor Huxley does not mean what he says when he asserts that acts may be moral which are not directed to a good end. Were it so, such words as "virtue" and "goodness" would have no rational and logical place in his vocabulary. Similarly, I would fain disbelieve him when he says he "utterly rejects" the distinction between "material" and "formal" morality. I would do so because whatever he may have said since, he did once maintain that "our volition counts for something as a condition of the course of events." If, however, he rejects the distinction he says he rejects, he thereby positively denies every element of freedom and spontaneity to the human will, and reduces our volition to a rank in the "course of events," which counts for no more than the freedom of a match as to ignition, when placed within the flame of a candle. With the enunciation of this fatalism, "formal morality" most certainly falls, and together with it every word denoting "virtue," which thus becomes a superfluous synonym for pleasure and expediency.

Free-will.

And here it may be well to make a few further remarks upon our power of will as connected with responsibility and moral reprobation. We have seen that the distinction between duty and pleasure is a fact which introspection shows us. Another fact which introspection also shows, is our power of "attention." By this attention is meant the deliberate, self-conscious act, not the mere automatic attention which a sudden strange sensation may call from us indeliberately. This distinction is recognised and well stated by Dr. Carpenter. He says:—

> "Now this state of *active* as compared with *passive* recipiency—of *attention* as compared with mere *insouciance*, may be either *volitional* or *automatic*; that is, it may be either *intentionally* induced by an act of the will, or it may be produced *unintentionally* by the powerful *attrac-*

tion which the *object* (whether external or internal) has for the eye. Hence, when we *fix* our attention on a particular object by a determinate act of our own, the *strength of the effort* required to do so is greater in proportion to the *attraction of some other* object. Thus, the student who is earnestly endeavouring to comprehend a passage in 'Prometheus,' or to solve a mathematical problem, may have his attention grievously distracted by the sound of a neighbouring piano, which *will* make him think of the fair one who is playing it, or of the beloved object with whom he last waltzed to the same measure. Here the will may do its very utmost to keep the attention fixed, and may yet be overmastered by an involuntary attraction too potent for it; just as if a powerful electro-magnet were to snatch from our hands a piece of iron which we do our very utmost to retain within our grasp."—*Mental Physiology*, p. 132.

Closely connected with this fact of active "attention" is the faculty of choice and volition of which we are all conscious. Just as our consciousness tells us that we are continuously existing beings, so our consciousness tells us that we have a power of choice which we occasionally exercise in opposition to what most strongly attracts us. We are conscious of volitions of two distinct kinds—(1.) An act of will in which we simply follow, without deliberation, in the direction induced by all the attractions and repulsions acting upon us—as when we walk down to dinner, or stretch out our hand to save a person from falling. (2.) An act of will in which, after full deliberation, we elect to follow a course which we perceive to be in opposition to the resultant impulse of all the involuntary attractions and repulsions acting upon us, and make an "anti-impulsive effort," *—as when, from a love of God, we deny ourselves an immediate gratification from indulgence in which we do not perceive any remote evil consequences to ourselves. It is not necessary on this occasion to go further into the question of free-will; it is sufficient for our present purpose to note, as an unquestionable fact, that men believe they have this double kind of volition, and that they have a firm persuasion of their power of true voluntary action—and that they have such persuasion, the terms in all languages of morál reprobation or praise is sufficient to demonstrate. When a man has notoriously lost his power of self-control, and become an automaton, dominated by external or internal attractions and repulsions, we say he is not "an accountable being." Nevertheless, it may here be remarked by the way, that fatalists, like Herbert Spencer and the late John Stuart Mill, when they assert that all men's actions are determined, assert that which it is impossible even for them to pretend to prove, and which can only be maintained on speculative and *à priori* grounds, yet inasmuch as they contradict the common voice of mankind, and what so many affirm to be the declaration of their consciousness, they are clearly bound to *prove* their position. Assertors of "free-will" do not, of course, maintain that they are conscious of what is external to their consciousness, as if they could see, as a spectator, that external and internal influences do not in all cases determine their actions; but what they do assert is, that they are conscious that they themselves, in the very act of deciding, exercise occasionally a free power of choice, for which choice they are justly responsible. Just as a blind man pushing his way through a thicket in one direction, but suddenly taking another, because on reconsidering his past footsteps he is convinced he was wrong, *knows* that his change of path was due to his own thoughts, and not to any rocks, pits, or other external impediments, though he cannot affirm that such were not close to him when he turned. Fatalists who try to build up on their principles a representation of what we do when we exercise a power of choice, devise a representation which does not answer to, and fully resemble the process made known to us by our consciousness, but is an incomplete representation * of that process.

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* Upon this subject see the article on Mr. Mill's denial of Free-will in the April number of the 'Dublin Review,' and an appendix to that article in the number for July 1874.

In closest relation with our power of will is that power which our self-consciousness assures us we have of apprehending moral worth, which we have already considered, but as to which a few final words may be added. On introspection, it is at once apparent that in pronouncing any man or action to be "good" our reason forms a judgment different in kind from the judgment that any man or action is "pleasure-giving." If our neighbour, intending to do us a malicious injury, through some miscalculation on his part, benefits us, we do not on that account judge him in so acting to have acted "rightly," or pronounce his action to have been "virtuous." Indeed, so far from our necessarily associating "pleasure" with virtue, we judge a benevolent action to have had its merit increased by the very self-denial which may have inevitably resulted from its performance. We are able clearly enough to distinguish between a deliberate judgment that any given action of ours is right or wrong, and a spontaneous indeliberate tendency to do what is generally approved of by those with whom we dwell or a feeling of distress at some violation of conventionality. The failure to repress, when in society, some harmless natural function may produce the most acute feeling of distress without the smallest perception that any "wrong" has been committed; and on the other hand we may have given pleasure to and received the most lively proofs of gratitude from our fellows on account of some act which has been really done against our conscience. Far from our perception of morality being the same thing with a feeling of deference to the opinions and feelings of our fellow-men, we ourselves judge whether society in certain cases is right or wrong, and we demand a rational basis and justification for social claims themselves.

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* See an article in the 'North British Review,' April—July, vol. lii. 1870, p. 93.

Mr. Herbert Spencer's views.

The name of Mr. Herbert Spencer has been above referred to in connection with this matter, and the position he takes up must not be passed over. In the first place the process of evolution, as understood by Mr. Spencer, compels him to be at one with Mr. Darwin in his denial of the existence of any fundamental and essential distinction between duty and pleasure. Virtuous lives are represented as mere results of the continuation of that same process which has produced the association of wolves in packs or hornets in a nest. Brutal passions—the desire to pursue and prey upon a victim or to escape such pursuit, or the gross appetite of sex, are given to us as the ultimate components at once of our loftiest aspirations and of our tenderest feelings—of the most refined human affection and of our sense of awe at the Divine Majesty itself. It cannot in fact be denied that "virtue" and "goodness" are words which can have no rational or logical place in the vocabulary of any one who accepts Mr. Herbert Spencer's views. This is the case since Mr. Spencer explicitly and utterly denies every element of freedom to the human will—a fatal but necessary consequence of his denial of the persistent and substantial ego.

He says:—*

> "Considered as an internal perception, the illusion" [of human freedom] "consists in supposing that at each moment the *ego* is something more than the aggregate of feelings and ideas actual and nascent, which then exists." . . . . "This composite psychical state which excites the action, is at the same time the *ego* which is said to will the action. Naturally enough, then, the subject of such psychical changes says that he wills the action; since, psychically considered, he is at that moment nothing more than the composite state of consciousness by which the action is excited. But to say that the performance of the action is, therefore, the result of his free will, is to say that he determines the cohesions of the psychical states which arouse the action; and as these psychical states constitute himself at that moment, this is to say that these psychical states determine their own cohesions, which is absurd. Their cohesions have been determined by experiences—the greater part of them, constituting what we call his natural character, by the experiences of antecedent organisms, and the rest by his own experience. The changes which at each moment take place in his consciousness, and among others those which he is said to will, are produced by this infinitude of previous experiences registered in his nervous structure, co-operating with the immediate impressions on his senses: the effects of these combined factors being in every case qualified by the physical state, general or local, of his organism."

Our doctrine is that the will indeed necessarily follows the stronger motive, but that the soul has, on certain occasions, the power of intensifying one motive at will, and so making that motive, for the time, the stronger. As Professor Carpenter has justly observed, much of the mind's work is done by its "automatic faculties," but "their direction is given by the will, in virtue of its power of *intensifying* any idea or feeling that is actually present to consciousness, by fixing the attention upon it." Asserting, as we do, the substantial and persistent ego, we have no hesitation in affirming that the ego occasionally *does* "determine the cohesions of the psychical states which arouse an action," and at the same time in denying "that these psychical states determine their own cohesions."

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* 'Psychology,' vol. i. p. 500.

Mr. Spencer adds:—

> "To reduce the general question to its simplest form:—Psychical changes either conform to law or they do not. If they do not conform to law, this work, in common with all works on the subject, is sheer nonsense: no science of psychology is possible. If they do conform to law, there cannot be any such thing as free will."

It is really impossible to deny that this passage is "sheer nonsense," since works on psychology have again and again been written by authors who fully accept the freedom of the will. Mr. Spencer's error lies in not distinguishing between perceptions and emotional states which cannot but produce an effect in direct proportion to their strength and that faculty of will which our consciousness tells us is no mere impotence arising from incomplete adjustment; but a conscious exertion of power adding to the strength of such emotional states or such perceptions as may be selected for intensification.

But the want in Mr. Spencer's mind of any perception of morality is so utter that he looks upon the absence of moral freedom as a positive gain. He says:—

> "I will only further say that freedom of the will, did it exist, would be at variance with the beneficent necessity displayed in the evolution of the correspondence between the organism and the environment." . . . . "were the inner relations partly determined by some other agency, the harmony at any moment existing would be disturbed, and

the advance to a higher harmony impeded. There would be a retardation of that grand progress which is bearing humanity onwards to a higher intelligence and a nobler character."

In blaming Mr. Spencer for this passage I strongly protest against being charged, as I have been by Professor Huxley, with the absurdity of denying merit and beauty to spontaneous acts of voluntary adhesion to good. Such acts may be highly *meritorious*, and at the same time eminently *free*. All I mean is that for an act to be "moral," the doer of it must directly or indirectly be moved by the idea of "right" present to his mind then or antecedently, so as to have become mentally habitual. Such habitual actions may be eminently "free," since freedom consists in the unhindered power of following the dictates of intelligence concerning what is best and most desirable. In proportion as less worthy motives have more power over us, just so far are we less free.

It would be a superfluous task here to expatiate upon the immorality of a philosophy which denies to man's will any more power of choice than a fragment of paper thrown into a furnace has a choice concerning its ignition.

But Mr. Spencer's system is even yet more profoundly immoral, as it denies any objective distinction between right and wrong in any being, whether men are or are not responsible for their actions. According to our author, the laws of nature are ultimately reducible to one force not necessarily moral, and therefore all laws and all actions must be, in ultimate analysis, equally moral or equally immoral.

Every action whatever is a mode of the Unknowable, and the stab of the assassin and the traffic of the courtesan are as much the necessary results and outcome of that ultimate principle as are the charity of a Howard or the self-devotion of Marseilles' good bishop.

With reason then we may affirm of Mr. H. Spencer's system, "that it is radically and necessarily immoral." Although (as I have learned with no small surprise)* it is a fact that Mr. Spencer himself, when he published his theory, was himself unaware that it might "be so regarded."

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* From his 'Replies to Criticisms:' 'Fortnightly Review,' November 1873, p. 729.

Conclusion.

To sum up then, it is unquestionable, if what has been here urged is valid, that nothing put forward by Mr. Mill, Mr. Darwin, Mr. Huxley, or Mr. Spencer, has any weight in contradicting that lesson which nature, by introspection, teaches us—namely, that we have a power of discerning, and of freely obeying, an objective moral code which our faculties are organised to discern; a power of forming more or less developed moral judgments being universally diffused amongst mankind, while there is no evidence that any such judgments are formed by even the very highest members of the mere brute creation. Moreover, it is clear that to assert moral judgments to be but feelings of social sympathy or love of tribe inherited and generally misunderstood, is equivalent to a denial of morality root and branch; and, as we may hereafter come still more plainly to see, absolutely stultifies moral precepts as being necessarily mere folly.

CHAPTER VI.

MAN.

"The study of religious beliefs, of progress, or degradation, and of the community of nature found in the most diverse races of men, show (together with language and moral perception) that man differs fundamentally from brutes, while the anatomical resemblances to animals which his frame exhibits in no way invalidate the argument drawn from the study of mind, that his origin (like his nature) is peculiar and distinct."

Other human characteristics to be studied besides language and moral perception.

WE have seen, in the last two chapters, that rational language and moral perception are universal characters of man in his normal condition, i.e., when he is neither locally nor generally paralysed, nor insane.

But to learn fully the lesson which science has to teach us with respect to his nature, we must consider certain other characteristics common to him, both as presented to us in his simplest and most barbarous condition as well as in his highest state of civilisation. Only by so doing can we qualify ourselves to form any scientific opinion as to the much-debated question of his origin. In attaining this stage of our inquiry, we have reached that which is proverbially the proper study of mankind.

Special call now for this study.

And, indeed, that the proper study of mankind is man seems to be a proposition the truth of which is being now forced upon us with peculiar intensity. In spite of the expulsion of the "microcosm" by astronomy from the centre of the material universe, he is at present acquiring yet fresh claims to be considered the one key whereby may be unlocked the mysteries of the "macrocosm." With the dispelling of that dream in which the little planet

Tellus appeared the great solid nucleus of encircling crystal spheres existing only for its sake, began the vigorous prosecution of the physical sciences—the investigation of nature *external to man.* This investigation having reached a stage rendering possible the exposition of all non-human phenomena as the multifold co-ordinated and harmonised manifestations of one great process—a *theory of evolution;* the universal adequacy of that theory must be tested by its application to the phenomena presented to us by man both in his highest existing condition, and also as the wild tenant of the forest—the *Homo sylvaticus.* If all the phenomena which human life presents are capable of being brought under the laws which regulate inferior organisms, it is hardly possible to exaggerate the amount of support which would thereby be given to the universality of the evolutionary theory. Moreover, it is plain that in such a case all those who deem the theory of evolution sufficient to account for the origin of all other animals, must logically admit it to be sufficient to account for the origin of man also.

At present there are two very distinct views as to the origin of the animal population of this planet.

Two conflicting hypotheses.

I. The first of these views—the monistic hypothesis—asserts that one uniform law has presided over the whole, since all such creatures are distinguished from one another by differences which are differences of degree only, and not of kind.

II. The other of these views—the dualistic hypothesis—asserts that man (whatever may have been the case with brute animals) must have originated in some special manner, since the difference between him and brutes is a difference of *kind,* and not one merely of degree—he embodying a distinct principle not present in brute animals.

A supporter of the monistic hypothesis must maintain that man at his first appearance was literally in the lowest and most brutal stage of his existence, whence he has gradually ascended to his present condition by a process of progressive development attended with only exceptional and relatively insignificant processes of retrogression and degradation. He will consequently not only maintain that races have existed without articulate speech, or any equivalent symbolic system, without perceptions of "right" and "wrong," and without religious conceptions, but also that the first men were actually so destitute. He may or may not expect to find specimens of this lowest condition of mankind still surviving at the present day, but he will surely anticipate that archæological, historical, and ethnological research must reveal facts pointing plainly towards such an early condition. He will also anticipate that these sciences will bring to our knowledge tribes in an intellectual stage which is less remote from that presumed early condition than from a choice assemblage of men living now—say, the members of our own "Royal Society."

A supporter of the dualistic hypothesis must, on the other hand, maintain that man at the very first moment of his existence was at once essentially man, and separated, at his very origin, from the highest brutes by as impassable a gulf as that which anywhere exists between them to-day. He will consequently not only maintain that no race will anywhere be found without a mode of rational expression, moral perceptions, and religious conceptions (however rudimentary or atrophied), but also that the first men possessed all these. He will be confident that no scientific researches will bring to our knowledge any human races devoid of reason, or (what we have in a former chapter seen to be its necessary concomitant in a "rational animal") the power of expressing internal *thoughts*, as distinguished from mere *feelings*, by external sensible signs. He will also expect to find in all races of men indications of religious conceptions and of an apprehension of right and wrong, however curiously or perversely these abstract conceptions may be concretely embodied. Finally, he will be confident that no race will be found less remote intellectually from the highest existing men than from a state of brutal irrationality. The actual first origin of man must for ever remain a problem insoluble by unaided reason—a matter incapable of direct investigation, and, revelation apart, only to be investigated by conjecture and analogy. This being so, we must be content to study existing races of men, and thence arrive at the best conclusions we may, with the aid to be derived from history, archæology, and geology.

Test questions for these.

The questions, then, to which attention should be directed with a view to determining whether the balance of evidence favours the monistic or the dualistic hypothesis, are the following; and to answer these, the savage, *Homo sylvaticus*, must serve as our test. 1. Can any direct evidence be found of races of man, past or present, existing in a brutal or irrational condition? 2. Does available evidence clearly point to the past existence of such a condition? 3. Are races anywhere to be found in a condition which is less remote from mere animal existence than from the highest human development of which we have as yet experience?

Should unmistakable evidence of the sort be forthcoming, then the existence of an essential difference, a difference of kind, between human and brutal nature, could no longer be maintained. It would also follow that if other animals have arisen by a merely natural process of development, reason could oppose no barrier to the belief that the origin of man, in the totality of his nature, was also due to such a merely natural process. If, on the other hand, no such direct evidence is forthcoming, and none even pointing clearly in the indicated direction; if, also, no races can be found in a condition nearer to irrational brutality than to the highest refinement—then it must be admitted that we have no scientific ground for asserting that man is of one nature with the brutes, or that it is an *à priori* probability that his origin was the same as theirs.

More than this, in the absence of such evidence it may fairly be inferred that there is an *à priori* probability against this community of nature and origin. It may be so inferred, because it seems likely that if all men were once irrational animals, some tribe of the kind would have survived in some remote part of the world to this day, especially as, on the theory of evolution, they must have been well fitted to maintain themselves under the conditions existing in their own region.

Man is generally admitted to be, as to antiquity, at the most, but a tertiary mammal; but Australia presents us with a fauna in some respects triassic. Some eminent authorities, however, assert that miocene man still exists, and that we behold him in the Esquimaux. It may naturally be a matter of some regret that this cannot be proved, since, if the Esquimaux are indeed miocene men surviving to this day, an investigation of their mental condition would almost suffice to solve the problem decisively one way or the other. It would suffice to solve it, since we might fairly argue from the progress made between the miocene period and to-day, to that which might be supposed to have taken place between the beginning of the tertiary period and the miocene.

If, however, ethnology and archæology fail to furnish the requisite evidence, and thus show themselves manifestly incompetent to solve the question, then the cause must be transferred to the tribunal of Philosophy for decisive judgment. In that case, if philosophy (including psychology) shows us, as it is here contended that it does, that there is a difference of kind between the lowest races of men and the highest species of brutes, pointing to a difference of essential principle, and, therefore, of origin, then ethnology and archæology (in the case of their supposed failure as to the evidence referred to) become important auxiliaries, and will powerfully aid to reinforce such conclusion. They will, by their eloquent silence, supply us with additional grounds for maintaining that the progress of physical science will but more and more clearly bring out the difference existing between all merely animal natures and that of the rational animal man.

Three new subjects of inquiry.

There are five main subjects of inquiry which bear upon this question. These are: 1. Language; 2. Morals; 3. Religion; 4. Progress; 5. Community of Nature—as made known (or contradicted) by yet other lines of inquiry.

Language and morals have been already considered in the two preceding chapters, but before passing to the third subject-matter above enumerated, it may be well to refer to some further unprejudiced testimonies to the unity of human reason generally, as exhibited in widely different races. And here Mr. Tylor may again be cited with advantage. He expresses himself* thus: "We come back to the fact, so full of suggestion, that the languages of the world represent substantially the same intellectual art, the higher nations indeed gaining more expressive power than the lowest tribes, yet doing this not by introducing new and more effective central principles, but by mere addition and improvement in detail." Speaking of the native proverbs of Fernando Po, he tells us,† "There are hundreds at about as high an intellectual level as those of Europe," and he cites examples. We have said that we mean by language, not emotional expressions, but the enunciations of judgments concerning "the *what,*" "the *how,*" and "the *why.*" Mr. Tylor's verdict as to the result of the application of this test to the expressions of savages is sufficiently distinct. He says:—‡

Preliminary note.

> "Man's craving to know the *causes* at work in each event he witnesses, the reasons *why* each state of things he surveys is such as it is and no other, is no product of high civilisation, but a characteristic of his race down to *its lowest stage.* Among rude savages it is already an intellectual appetite whose satisfaction claims many of the moments not engrossed by war or sport, food or sleep."

This decisive judgment may yet be reinforced by some very distinct admissions, for which we have to thank Mr. Darwin himself:—§

> "The Fuegians rank amongst the lowest barbarians; but I was continually struck with surprise how closely the three natives on board H.M.S. 'Beagle,' who had lived some years in England and could talk a little English, resembled us in disposition, and in most of our mental qualities."

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* 'Primitive Culture,' vol. i. p. 216. † *Ibid.* vol. i. p. 80.
‡ *Ibid.* vol. i. p. 332. The italics are ours.
§ 'Voyage of the "Beagle,"' vol. i. p. 34.

Again:—*

> "The American aborigines, negroes, and Europeans, differ as much from each other in mind as any three races that can be named; yet I was incessantly struck, whilst living with the Fuegians on board the 'Beagle,' with the many little traits of character, showing how similar their minds were to ours; and so it was with a full-blooded negro with whom I happened once to be intimate."

Again:† "Differences of this kind (mental) between the highest men of the highest races and the lowest savages, are connected by the finest gradations." He also bears testimony to the substantial unity (he says, "close similarity") between men of all races in the following passage:‡ "This is shown by the pleasure which they all take in dancing, rude music, acting, painting, tattooing, and otherwise decorating themselves—in their mutual comprehension of gesture-language—and, as I shall be able to show in a future essay, by the same expression in their features, and by the same inarticulate cries, when they are excited by various emotions. This similarity, or rather identity, is striking, when contrasted with the different expressions which may be observed in distinct species of monkeys. There is good evidence that the art of shooting with bows and arrows has not been handed down from any common progenitor of mankind, yet the stone arrow-heads, brought from the most distant parts of the world and manufactured at the most remote periods, are, as Nilsson has shown, almost identical; and this fact can only be accounted for by the various races having similar inventive or mental powers. The same observation has been made by archæologists with respect to certain widely-prevalent ornaments, such as zigzags, &c.; and with respect to various simple beliefs and customs, such as the burying of the dead under megalithic structures. I remember observing in South America, that there, as in so many other parts of the world, man has generally chosen the summits of lofty hills, on which to throw up piles of stones, either for the sake of recording some remarkable event, or for burying his dead."

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* 'Voyage of the "Beagle,"' vol. i. p. 232.

† *Op. cit.* p. 35.

‡ *Op. cit.* p. 232.

Mr. Darwin then plainly tells us that all the essential mental characters of civilised man are found, in however less completely developed a state, in the very lowest races of men.

These testimonies by themselves are sufficient to show that, in the opinion of those most capable of acquiring and most certain to acquire information tending to confirm the monistic hypothesis, not only are there no evidences of men in a nascent state as to the power of speech, but all available evidence shows that in the essential of language the various existing races of men are mentally one. This, indeed, is manifest and undeniable. No tribe exists which cannot count two, cannot say "I," "woman," "death," "food," &c. In other words, there is no tribe which does not express general conceptions and abstract ideas by articulate sounds. But, as we have seen, the differences between vocal sounds capable of such expression are but differences of *degree*, while the differences between all such utterances and vocal utterances which but express sensations and emotions is a difference of *kind*. Therefore, we were compelled to conclude, in our last chapter but one, that the most imperfect languages offer us no indication of a transition from irrational cries, being separated from the latter by an indefinitely wide barrier, while they differ from the highest speech, but by a greater simplicity, which indeed is sometimes far more apparent than real. We have also seen reason to conclude, in our last chapter, that there is no evidence whatever for the existence of man in a non-moral condition, or with fundamental moral principles which directly contradict our own.

First new subject—religion.

Turning now to the first subject-matter of our present inquiry, that concerning *religion*—concerning the universality, or non-universality, of religious conceptions—it is once more necessary here, as in the subjects "language" and "morals," to commence with definitions and distinctions. Obviously it cannot here be meant to assert that men have, almost universally, a positive religious belief, since so many of those we, most of us, know familiarly, have none. It is evident that we have no cause to be surprised at finding generally diffused in some other nations irreligious or non-religious phenomena analogous to those we may meet with in our own. Neither can it be meant that a distinct religious system is to be found in every nation or tribe, since it would be very probable that the descendants of some isolated irreligious parents should have grown up devoid of religion altogether. What *is* meant by the universality of religious conceptions is the general diffusion amongst all considerable races of men: first, of a power to apprehend the existence of a good supernatural Being possessed of knowledge and will, and rewarding men in another world in accordance with their conduct in this; secondly, of a tendency to believe in the actual existence of superhuman powers and beings, and also in an existence beyond the grave—however shadowy, distorted, or aborted such conceptions may seem to us to be.

We have then to consider our authors' teachings as to the following questions:—First, whether any people are now in a state equally unconscious of the preternatural, and equally unconcerned with regard to a future life, as are the brutes? Secondly, whether any races exist which may be deemed to be in a transitional condition from brutish non-religiosity, or with religious conceptions so essentially divergent from our own as to be different in *kind*, and, therefore, incapable of transition either from or to the highest religious condition?

Prejudices.

But if in the former inquiries it was necessary for us to be upon our guard against the misapprehensions and misinterpretations of travellers, it is still more necessary for us to be so here. The necessity is so great because both theological and anti-theological prejudices are more likely than are any others to warp the judgment and influence the appreciations of even well-meaning observers. As to the theological prejudice, however, we can effectually guard against that by building upon the facts and inferences offered to us by the authors here referred to. Whatever may be their most conspicuous merits, or their shortcomings, theological prejudice will not be a vice we shall have to guard against in them. Admissions made by them, favourable to theology, may be accepted without apprehension upon that score.

As regards the influence of bias in this matter, I will cite some remarks of Mr. Tylor himself which are well worthy of consideration:—

> "While observers who have had fair opportunities of studying the religions of savages have thus sometimes done scant justice to the facts before their eyes, the hasty denials of others who have judged without even facts can carry no great weight. A sixteenth-century traveller gave an account of the natives of Florida which is typical of such: 'Touching the religion of this people which we have found, for want of their language we could not understand neither by signs nor gesture that they had any religion at all. . . . . We suppose that they have no religion at all, and that they live at their own libertie.' Better knowledge of these Floridans nevertheless showed that they had a religion, and better knowledge has reversed many another hasty assertion to the same effect; as when writers used to declare that the natives of Madagascar had no idea of a future state, and no word for soul or spirit, or when Dampier inquired after the religion of the natives of Timor, and was told that they had none; or when Sir Thomas Roe landed in Saldanha Bay, on his way to the court of the Great Mogul, and remarked of the Hottentots that 'they have left off their custom of stealing, but know no God or religion.' Among the numerous accounts collected by Sir John Lubbock *as evidence* bearing on the absence or low development of religion among low races, some may be selected as lying *open to criticism* from this point of view. Thus, the statement that the Samoan Islanders had no religion cannot stand in the face of the elaborate description by the Rev. G. Turner of the Samoan religion itself; and the assertion that the Tapinombas of Brazil had no religion, is one not to be received without some more positive proof, for the religious doctrines and practices of the Tapi race have been recorded by Lery, De Laet, and other writers. Even with much time and care and knowledge of language, it is not always easy to elicit from savages the details of their theology. They rather try to hide from the prying and contemptuous foreigner their worship of gods who seem to shrink,

like their worshippers, before the white man and his mightier Deity. And thus, even where no positive proof of religious development among any particular tribe has reached us, we should distrust its denial by observers whose acquaintance with the tribe in question has not been intimate as well as kindly. Assertions of this sort are made *very carelessly*. Thus, it is said of the Andaman Islanders that they have not the rudest elements of a religious faith; Dr. Monat states this explicitly; yet it appears that the natives did not even display to the foreigners the rude music which they actually possessed, so that they could scarcely have been expected to be communicative as to their theology, if they had any. In our time, the most striking negation of the religion of savage tribes is that published by Sir Samuel Baker, in a paper read in 1866 before the Ethnological Society of London, as follows: 'The most northern tribes of the White Nile are the Dinkas, Shillooks, Nuehr, Kytch, Bohr, Aliab, and Shir. A general description will suffice for the whole, excepting the Kytch. Without any exception, they are without a belief in a supreme being, neither have they any form of worship or idolatry; nor is the darkness of their minds enlightened by even a ray of superstition.' Had this distinguished explorer spoken only of the Latukas, or of other tribes hardly known to ethnographers except through his own intercourse with them, his denial of any religious consciousness to them would have been at least entitled to stand as the best procurable account, until more intimate communication should prove or disprove it. But in speaking thus ot comparatively well-known tribes, such as the Dinkas, Shillooks, and Nuehr, Sir S. Baker ignores the existence of published evidence, such as describes the sacrifices of the Dinkas, their belief in good and evil spirits (adjok and djyok), their good deity and heaven-dwelling creator, Dendid, as likewise Néar, the deity of the Nuehr, and the Shillooks' creator, who is described as visiting, like other spirits, a sacred wood or tree. Kaufmann, Boun, Bollet, Lejean, and other observers, had thus placed on record details of the religion of these White Nile tribes, years before Sir Samuel Baker's rash denial that they had any religion at all."—*Primitive Culture*, vol. i. p. 381.

Again, Mr. Tylor quotes, as surprisingly inconsistent,—

"Mr. Moffat's declaration as to the Bechuanas, that 'man's immortality was never heard of among that people,' he having remarked in the sentence next before, that the word for the shades or manes of the dead is 'liriti.' In South America, again, Don Felix de Azara comments on the positive falsity of the ecclesiastics' assertion that the native tribes have a religion. He simply declares that they have none; nevertheless, in the course of his work he mentions such facts as that the Payaguas bury arms and clothing with their dead, and have some notions of a future life, and that the Guanas believe in a being who rewards good and punishes evil. In fact, this author's reckless denial of religion and law to the lower races of this region justifies D'Orbigny's sharp criticism * that 'this is indeed what he says of all the nations he describes, while actually proving the contrary of his thesis by the very facts he alleges in its support.' "—*Ibid.* vol. i. p. 379.

Mistakes.

Once more, by way of showing how the real meaning of words may escape the reporters of such expressions, Mr. Tylor judiciously observes:—

"Prudent ethnographers must often doubt accounts of such, for this reason, that the savage who declares that the dead live no more, may merely mean to say *that they are dead.* When the East African is asked what becomes of his buried ancestors, the 'old people,' he can reply that 'they are ended,' yet at the same time he fully admits that their ghosts survive."—*Ibid.* vol. ii. p. 18.

Mr. Tylor's own belief (expressed, of course, in terms conformable to his own view of evolution) as to the religion of the lower races, is thus declared:—†

Savage faiths.

"Genuine savage faiths do, in fact, bring to our view what seem to be rudimentary forms of ideas which underlie dualistic theological schemes among higher nations. It is certain that even amongst rude savage hordes native thought has already turned toward the deep problem of good and evil." He thus admits an essentially and distinctly ethical element into the theology of even "genuine" savages. But our author has yet more decided views as to the universality of religious conceptions. Concerning the existence of savages without religion, he says ‡ (speaking from his point of view as a supporter of the monistic hypothesis): "Though the theoretical niche is ready and convenient, the actual statue to fill it is not forthcoming. The case is, in some degree, similar to that of the tribes asserted to exist without language or without the use of fire: nothing in the nature of things [?] seems to forbid the possibility of such existence, but, as a matter of fact, the tribes are not found."

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* 'L'Homme Américain,' vol. ii. p. 318.
† 'Primitive Culture,' vol. ii. p. 288.
‡ *Ibid.* vol. i. p. 378.

Australians.

As we have said, the native Australians have much pretension to the post of lowest of existing races, and we often hear a great deal as to their non-religious condition; nevertheless Mr. Tylor quotes* the Rev. W. Ridley to the effect that "whenever he has conversed with the Aborigines, he found them to have quite definite traditions concerning supernatural beings, as Baime, whose voice they hear in thunder, and who made all things." Moreover this testimony is reinforced by that of Stanbridge ("T. Eth. Soc." vol. i. p. 301), who is quoted as asserting that so far from the Australians having no religion, "they declare that Jupiter, whom they call 'foot of day' (Ginabong-Beary), was a chief among the old Spirits, that ancient race who were translated to heaven before man came on earth." But not only do we thus meet with distinct conceptions of the supernatural where their existence has been denied, but some of the external manifestations of these conceptions are by no means to be despised. Thus in a prayer used by the Khonds of Orissa we find † the following words: "We are ignorant of what it is good to ask for. You know what is good for us. Give it us!" Mr. Tylor adds: "Such are types of prayer in the *lower* levels of culture!"

But the universal tendency of even the most degraded tribes to practices which clearly show their belief in preternatural agencies is too notorious to admit of serious discussion, while the wide-spread, and probably all but universal, practice of some kind of funereal rites speaks plainly of as wide a notion that the dead in some sense yet live. As to the power possessed by even the lowest races of apprehending strictly religious conceptions, the annals of the "propagation of the faith" prove it abundantly. The Australians, however, are generally believed to be the most hopeless subjects of missionary effort, and yet Western Australia[*] demonstrates the utter groundlessness of this persuasion. It does so by means of the flourishing community of reclaimed savages who live under the care and supervision of the fathers of the Benedictine Abbey situate in that region. There can be no question but that Australians can, by such agency, be civilised, or that they can, as a community, be perpetuated in a reclaimed condition, though the influx of hostile influences may ultimately prevent the accomplishment of the benevolent object so pursued.

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* 'Primitive Culture,' vol. i. p. 378.

† *Ibid.* vol. ii. p. 335.

We may conclude, then, that no existing race is generally devoid of conceptions regarding the preternatural, or entirely unconcerned about future existence, whether their own or that of their friends or enemies.

Are the rudest religious ideas fundamentally like higher ones?

It remains to inquire whether any savage races may be fairly considered as in a transitional state from a non-religious condition, like that of beasts; or whether the religious conceptions of any race are so different *in kind* from our own as to render it impossible for them to be the degraded remnants of former religious beliefs of a higher character. As to the first of these questions, it may be observed that the difference between a nature capable of religious conceptions and one not so capable is a difference of *kind*, and therefore "transitions" are just as possible or as impossible here as in the previously considered matters of morality and speech. It appears to me manifest that no combinations of merely sensible perceptions could give rise to the conception of beings of a preternatural nature and with preternatural powers. It is a question not of a vague fear, but of conceptions of beings with superhuman attributes. As to the second question—that concerning the nature of religious conceptions in the most distinct races—it may be safely affirmed, on Mr. Tylor's authority, that the differences are often much more superficial and the agreements much more profound than is very often, if not generally, supposed. The extreme want of flexibility of so many minds is the cause of this difficulty of perceiving how often the same essential idea underlies external modes of representation which are very different. The personifications of stars, rivers, clouds, &c., when viewed under a certain aspect, are to some tribes not only the natural expression of their religious conceptions, but probably even the nearest approach to truth now possible to them apart from revelation. As to their conceptions Mr. Tylor remarks:[*] "They rest upon a broad philosophy of nature, early and crude indeed, but thoughtful, consistent, and quite really and seriously meant." As to the *crudity* of these modes of expressing a belief in the general action of superhuman causation, it may be remarked that after all the error was trifling compared with that of modern Materialists —i.e., the modern crude conception that because the phenomena of nature are not produced by a human personality, they are produced by *none!* Mr. Tylor himself says,[†] as to the real resemblance between apparently very different religious developments, "Baime, the creator, whose voice the rude Australians hear in the rolling thunder, will sit enthroned by the side of *Olympian Zeus himself.*"

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[*] See 'Mémoires Historiques sur l'Australio,' par Mgr. Rudesino Salvado, 1854.

We have heard much as to the notion entertained by some barbarians[‡] that a distinction of ranks extends into the next world, and that the future state depends upon the social condition of the departed. But similar notions may exist amongst civilised people, as was evidenced by the often-quoted French lady of the *ancien régime*, who exclaimed, on learning the death of a profligate noble, "God will think twice before he damns a man of the marquis's quality." Indeed it may be said that a belief in the continuance after death of the conditions of this life is at the present time spreading widely amongst many thousands who accept the teachings of Spiritism as a new gospel. But how often may not the highest signification lie hidden and latent under a term which is apparently but sensuous in its meaning? The loftiest terms in use amongst us even now, whether in Science, Religion, or Philosophy, are, when ultimately analysed, but sensuous symbols, such being the necessary materials of our whole language; but this by no means prevents our attaching to such subjects very different *ideas*. Who, when speaking of the spirit of Shakespeare, thinks of the pulmonary exhalation which that term primitively denoted? Mr. Tylor objects* to the expression, "an offering made by fire of a sweet savour before the Lord," as being barbarous; but what words could have been used to express spiritual acceptability which would *not* have had a primarily sensuous meaning? Yet granted that many races have no higher conceptions as to the preternatural than belief in demons, dread of witchcraft, and belief in ghosts, is that any reason why such races should not be descended from remote ancestors with a much higher creed? Such, indeed, does appear to be the opinion of Sir John Lubbock, who says:† "Religion appeals so strongly to the hopes and fears of men, it takes so deep a hold on most minds, in its higher forms it is so great a consolation in times of sorrow and sickness, that I can hardly think any nation would ever abandon it altogether." Again, in reply to the Duke of Argyll, who had objected existing phenomena, Sir John observes:‡ "If the Duke means to say that men who are highly civilised, habitually or frequently lose and scornfully disavow religion, I can only say that I should adopt such an opinion with difficulty and regret." The latter of these passages takes away any weight which might attach to the former, for it is difficult to believe that the passage last quoted can have been seriously meant by its author when we reflect that he must be acquainted with the views of Buchner, Vogt, and Strauss. It is in one respect a calamity of our time and country that unbelievers, instead of, as in France, honestly avowing their sentiments, disguise them by studious reticence—as Mr. Darwin at first studiously disguised* his views as to the bestiality of man, and as the late Mr. Mill silently allowed himself to be represented to the public as a thorough believer in God. When we consider how energetically atheism manifested itself recently in Paris, its passionate development in Spain with the vigorous atheistic declarations of a late Spanish Colonial Minister, when any one at all acquainted with the Continent must know that it counts its enthusiastic disciples by tens of thousands, it is surely nothing less than solemn trifling† to speak of "difficulty" in recognising facts so patent.

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[*] 'Primitive Culture,' vol. i. p. 258.

[†] *Ibid.* vol. i. p. 248.

[‡] *Ibid.* vol. ii. p. 78.

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* 'Primitive Culture,' vol. ii. p. 350.
† The 'Origin of Civilisation,' p. 331.
‡ *Ibid.* p. 348.

We have, then, but to look about us to see how very easily such a corruption as that supposed might have taken place, even in nations as highly developed as our own. We have but to imagine the emigration of a few such families, and the extinction of religion in their progeny would be inevitable; and in order that a belief in ghosts and in evil spirits might coexist with such religious ignorance, we need but suppose some spiritists to be amongst the emigrants in question.

But a difficulty is put forward as to the rite of sacrifice.

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* In a review of Haeckel in the 'Academy' of January 2, 1875, p. 16, Professor Huxley, with a zeal for Mr. Darwin more zealous than fortunate, objected to a less strong statement of this fact than that here given, as false and calumnious, denying that Mr. Darwin had been "reticent about his views respecting the origin of man." The statement objected to, however, simply reposed upon Mr. Darwin's own express declaration (in the introduction to his 'Descent of Man') as to his own conduct and motives, and, after all, he must have known them better than even the most eager of his disciples. His own words are as follows: "During many years I collected notes on the origin and descent of man, without any intention of publishing on the subject, but rather with the determination not to publish, as I thought that I should thus only add to the prejudices against my views." If this does not denote deliberate and intentional "reticence," the words have no meaning.

† At p. 256 Sir John also says:—"If we consider the various aspects of Christianity as understood by different nations, we can hardly fail to perceive that the dignity, and therefore the truth, of their religious beliefs, is in direct relation to the knowledge of science and of the great physical laws by which our universe is governed." Were this true, Vogt, Buchner, Darwin, and Strauss would exemplify the *highest* religious belief. But, in truth, what can be more preposterous than to assert or imply that physical science has to do with the *government* of the universe?

Sacrifice.

This practice is represented as having originated in the gross notion of actually feeding the gods with flesh, or at least in the idea of the spirit of such flesh serving as food to the spiritual beings to whom it was offered, and not in the modern notion of sacrifice. Mr. Tylor says:* "The mere fact of sacrifice to deities, from the lowest to the highest levels of culture consisting of the extent of nine-tenths or more of gifts of food for sacred banquets, tells forcibly against the originality of the abnegation theory." But, I ask, Why so? If food in the earliest period was *the* thing to sacrifice which constituted the greatest self-denial easily practised, then, on natural grounds only, we might conclude that such a practice would arise and that the habit, being once formed, continued and became widely diffused. But elsewhere, indeed, he concedes a great deal, and admits† that "we do not find it easy to analyse the impression which a gift makes on our own feelings, and to separate the actual value of the object from the sense of gratification in the giver's good will or request, and thus we may well scruple to define closely how uncultured men work out this very same distinction in their dealings with their deities." This remark is excellent; and how distinctly a real and unmistakably expressed ethical conception really accompanies such practices in some tribes he himself shows us in another passage. In a Zulu prayer quoted by him,‡ we find: "If you ask food of me which *you have given me*, is it not *proper* that *I* should *give it to you?*" As he truly says:§ "The Phœnicians sacrificed the dearest children to propitiate the angry gods, &c." But, in fact, early sacrifice contained at the least implicitly, potentially, vaguely and in germ, all that which later became actually developed and distinctly expressed. It is not possible for Mr. Tylor,‖ or for any one else, to prove that it did *not* do so, and that it *must have done* so we may judge from the *outcome* which has since resulted.

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* 'Primitive Culture,' vol. ii. p. 360.

† *Ibid.* p. 357.

‡ *Ibid.* p. 333.

§ *Ibid.* p. 361.

‖ Mr. Tylor's judgments as to ancient religion must be received with caution, when we observe the curious and hasty remarks into which he is occasionally betrayed as to the religion of to-day. He tells us that "St. Lazarus, patron saint of lepers and their hospitals, and from whom the

We may, then, conclude that there is no evidence of the existence of any race altogether devoid of religious conceptions, or possessing religious conceptions so fundamentally different from those existing to-day, that it is impossible to regard them as instances of degradation. The *actual* non-existence of such races may be taken as established from the failure of all efforts to prove their existence, and from the admissions herein quoted. Before leaving the subject, an amusing parody of certain recent attempts to explain almost all early history and legend by myths of dawn and sunrise may be cited. Mr. Tylor says,* with respect to the 'Song of Sixpence:'—"Obviously, the four-and-twenty blackbirds are the four-and-twenty hours, and the pie that holds them is the underlying earth covered with the overarching sky: how true a touch of nature it is, that when the pie is opened, that is, when day breaks, the birds begin to sing. The king is the sun, and his counting out his money is pouring out the sunshine, the golden shower of Danae. The queen is the moon, and her transparent honey the moonlight. The maid is the rosy-fingered dawn, who rises before the sun her master, and hangs out the clouds, his clothes, across the sky. The particular blackbird who so tragically ends the tale by snipping off her nose is the hour of sunrise." Mr. Tylor similarly explains the life and death of Julius Cæsar.

Second new subject, Progress.

We may now proceed to our fourth inquiry, that concerning "Progress," or the question whether, on the whole, progress has prevailed among savage races, or whether they have not, in the main, degenerated? As to this matter, both our authors are strongly of opinion that no extensive or predominant retrogression has taken place. Nevertheless, certain facts stated by them, and certain

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lazzarone and the *lazzaretto* take their name, obviously derives these qualities from the Lazarus of the parable." Does Mr. Tylor forget the Lazarus raised from the dead?

* 'Primitive Culture,' vol. i. p. 287.

opinions expressed, seem to indicate at least the possibility of a more extensive process of degeneration than they are inclined to allow. Social progress is an exceedingly complex phenomenon, the result of many factors; and even existing instances of retrogression, as in Spain, are palpable enough, while no one probably will contest the inferiority, in many respects, of the Greece of our day to that which listened to the voice of Aristotle or Plato.

Mr. Tylor contrasts very favourably with the late Mr. Buckle in his appreciation of this complexity, and in his perception of the importance of moral as well as of intellectual advance, and of the absurdity of those who make sure that every revolutionary change must be an improvement. He says:—

> "Even granting that intellectual, moral, and political life may, on a broad view, be seen to progress together, it is obvious that they are far from advancing with equal steps. It may be taken as a man's rule of duty in the world, that he shall strive to know as well as he can find out, and do as well as he knows how. But the parting asunder of these two great principles, that separation of intelligence from virtue which accounts for so much of the wrongdoing of mankind, is continually seen to happen in the great movements of civilisation. As one conspicuous instance of what all history stands to prove, if we study the early ages of Christianity, we may see men with minds pervaded by the new religion of duty, holiness, and love, yet at the same time actually falling away in intellectual life, thus at once vigorously grasping one-half of civilisation, and contemptuously casting off the other."
> —*Primitive Culture,* vol. i. p. 25.

This aspect of the question has an important bearing upon the view we should take respecting the earliest families of man. It is plain that a high moral standard might have existed with a most rudimentary state of art and the scantiest appliances of material civilisation. After speaking of Mr. Alfred Wallace and of Lieut. Bruijn Kops, Mr. Tylor says: "Ethnographers who seek in modern savages types of the remotely ancient human race at large, are bound by such examples to consider the rude life of primæval man under favourable conditions to have been, in its measure, a good and happy life."

It is difficult for us, surrounded by the abundant aids afforded by international communication, to realise the different effects which would probably result from an absence of such assistance and stimulus. This difficulty is perceived by Mr. Tylor, who remarks:* "In striking a balance between the effects of forward and backward movements in civilisation, it must be borne in mind how powerfully the diffusion of culture acts in preserving the results of progress from the attacks of degeneration." Therefore, at an early period, when there was little diffusion and no intercommunication between groups which had become isolated, degeneration might very easily have taken place, and these isolated groups may have become the parents of tribes now widely spread. Indeed, our author adds,—

> "Degeneration probably operates even more actively in the lower than in the higher culture. Barbarous nations and savage hordes, with their less knowledge and scantier appliances, would seem peculiarly exposed to degrading influences."

After giving an instance from West Africa, he continues:—

> "In South-East Africa, also, a comparatively high barbaric culture, which we especially associate with the old descriptions of the kingdom of Monomotapa, seems to have fallen away, and the remarkable ruins of buildings of hewn stone fitted without mortar indicate a former civilisation above that of the native population."

But actual degradation is a fact which is directly attested, and which the ruins of Central America demonstrate. Our author quotes Father Charlevoix to the effect that the Iroquois, having had their villages burnt,

> "have not taken the trouble to restore them to their old condition. . . . . The degradation of the Cheyenne Indians is matter of history, and 'Lord Milton and Dr. Cheadle came upon an outlying fragment of the Shushway race, without horses or dogs, sheltering themselves under rude temporary slants of bark or matting, falling year by year into lower misery.' "—*Primitive Culture*, vol. i. pp. 41, 42.

With respect to the question of the degradation of savage races, Mr. Albert J. Mott, in a remarkable address (delivered before the Literary and Philosophical Society of Liverpool on October 6th, 1873) "On the Origin of Savage Life," makes the following highly interesting and important remarks. Almost at the opening of his address he pertinently observes: "Questions concerning the origin of mankind have become either the radiating or the culminating points in most branches of science." And this is indeed most true.

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* 'Primitive Culture,' vol. i. p. 39.

Mr. Mott's remarks.

One of the facts the significance of which he insists most strongly on, is the existence of remarkable works of art in Easter Island. He says:—

> "Easter Island stands alone in the Pacific Ocean, two thousand miles from South America, and about one thousand from the nearest islands that are habitable. It is about twelve miles long by four in width; not so large as Jersey. The inhabitants, about a thousand in number, are savages. They are, of course, entirely isolated, and the island is seldom visited by ships. It is volcanic, and the soil fertile, but it could not maintain a population of ten thousand souls without the aid of civilisation or foreign intercourse. Probably the natives have never reached half that number in their present condition of life.
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> "This island is strewed with hundreds of carved stone images, many of them of extraordinary size. Some are nearly forty feet long. Many are over fifteen feet. Two of the smaller ones are in the British Museum. One of these is eight feet high, and weighs four tons. Many of these images have had separate stone crowns placed upon their heads, the crowns being from two to ten feet across. Thirty of these crowns were found on the hill from the rock of which they were sculptured, waiting to be removed. The images were generally set on pedestals, upon raised terraces, of which there are many. The terraces are about a hundred yards long, ten yards wide, and on one side—they stand on slopes—seven or eight yards high. They are built of large stones, some of them six feet long. There are also remains of numerous low stone houses and other structures in the island. The present inhabitants know nothing about the origin of these things." *
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> "Similar terraces and images have been seen in other islands now uninhabited. The ruins of ancient stone buildings of great extent are found in the Philippine Islands, the Ladrones, the Marshall and Gilbert groups; the Society Islands, the Navigators, and the Marquesas. They thus extend over ten thousand miles of ocean."

These facts he cites as unmistakable evidences of the

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* Palmer: Journal Royal Geographical Society, January 1870. 'Proceedings of the Royal Geographical Society,' vol. xiv. p. 108

existence of a very ancient and far-spread higher culture, of which they now constitute the only traces in the spots where they are found.

Again he observes:—

> "The whole of North America, from the Gulf of Mexico to Canada, is full of ancient works of earth and stone, chiefly found in the form of mounds and embankments. They exist in countless thousands, and I believe in every State; but the most remarkable are in the great plain or valley between the Alleghanies and the Rocky Mountains, a district at least a thousand miles square. Some lines of embankment are thirty feet high. Many areas inclosed by them are from one to two hundred acres; some are double this size. One group of works contains twenty miles of embankment. One of the mounds is one thousand feet in circumference, and seventy feet high. Another is two thousand feet round the base, and ninety feet high; a truncated pyramid, with a flat top of several acres. Many of the inclosures are in the form of circles and squares, and in many cases these figures are mathematically exact, notwithstanding their great size. In one of these exact squares each side is a thousand and eighty feet long, and the area inclosed twenty-seven acres. In one of the exact circles the diameter is seventeen hundred feet, the area forty acres. The precision of these figures has been ascertained by mathematical survey. The ellipse, also exact, is found in other cases."

Now, as he truly says:—

> "Neither a true circle, with a radius of eight hundred and fifty feet, nor a true square, with a side of one thousand and eighty feet, can be drawn upon open ground by any one without the help of exact measures and mathematical knowledge."

He proceeds:—

> "A numerous people spread over a wide empire must have had easy means of internal communication. We see, accordingly, from the objects found in the mounds, that they possessed copper in abundance, which came, doubtless, from the shores of Lake Superior, where the ancient mines have been rediscovered; obsidian, which is not found nearer than Mexico; mica, probably from South Carolina; pearls, and marine shells. And among the sculptured objects from Ohio are exact representations of the Toucan, which belongs to tropical South America, and the Manatee, found on the coast of Florida.
>
> "The objects of the greatest interest are the sculptured stone tobacco pipes; the oldest known tobacco pipes in the world, most of which were found in the same mound in Ohio.
>
> "These pipes are unique in form, and are carved out of hard

ornamental stone, in which their bowls are hollowed and their tubes drilled with perfect skill, and the bowls themselves are sculptured into the forms of birds, animals, and human heads, in a manner quite unapproachable by any but civilised races. It is necessary to see these pipes to appreciate the force of their silent testimony, and in the Salisbury Museum, where they are seen in contrast with the works of the present Indians and other savage tribes, the evidence is at once conclusive. They are works of art of a high order; true to nature and exquisite in finish. They are the products of taste, leisure, and refinement in a cultivated and prosperous nation."

And yet, as he justly remarks:—

"The North American Indians, when the continent first became known to us, were typical savages in every way. They were neither the lowest nor the highest, nor were they all alike; but if the modern theory is true, they were in one of those stages of development through which all civilised nations must have passed on their way to something higher. Yet these Indians, instead of springing from some lower state like that of the Australians, are proved to be the successors of a people in every respect much higher than themselves. They are proved also to be their descendants as well as their successors, because one at least of the most striking customs of the ancient race has been inherited, and because it is impossible to suppose that so numerous and cultivated a people could themselves become extinct, or that they could be exterminated by any immigrant tribes in the condition of the Indians. These savages, therefore, have reached their present state by degradation, and not by progress. Their rude arts are not their own invention, but are derived from higher art, become barbarous in their hands. No single custom found amongst them can be identified as of savage origin, for their former customs were of course those of their more civilised ancestors, and it is these as altered by barbarism that we find among them now.

"But if this is the case over an entire continent, what becomes of the idea that savage life in general is an example of arrested progress, and not an example of retrogression?"

In deprecation of hasty conclusions to the effect that the use of hieroglyphic signs is an indication of relative barbarism, he observes:—

"But if the letters M A N stand thus for the word expressing the idea of man, independently of their separate phonetic force, they have no advantage over any other symbol conveying the same meaning. Nay, they are at a certain disadvantage, because the idea of man is the same thing to every one, while the uttered sound expressing the idea is not so. An Englishman who calls a man a "mon" might be puzzled by the written word composed of letters. He could not be puzzled by a symbol which was independent of determinate sound.

"An alphabet is a grand instrument, and its powers have been wonderfully exercised, but it may well be doubted whether the language of thought cannot be even better expressed by symbols of some other kind; and it must, I think, be certain that this will depend largely on the structure of the spoken language, and the forms of thought which have become habitual. Those astronomical and other symbols which Mr. Tylor regards as survivals of the rudest form of writing are nevertheless retained and multiplied by the deliberate choice of modern science, for the double reason that they abbreviate the record, and that they can be universally understood, whatever the spoken language of the reader may be."

Another remark is important, as it puts forcibly before us the hasty conclusions in favour of barbarism so often found. He says:—

"Nor does subsequent ignorance prove that knowledge has not been possessed before. Of this the discoveries concerning ancient art continually bring fresh evidence. The glass from Assyria and the bronzes cast upon cores of iron are striking examples. The latter is especially important. It shows that the use of iron was well understood by the Assyrians, and that the use of bronze in ancient times was the result of choice, and not of ignorance. We might, I think, have safely assumed this on general grounds, and might thus have avoided much misleading speculation concerning a bronze age. Archæologists take for granted far too readily that if anything valued by ourselves was not used in former times, it cannot have been known, without considering what reasons besides mere want of knowledge may have led to its neglect."

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"We pick up a sunburnt brick, and treat it as a proof of ignorance in the makers. It may, on the contrary, be the evidence of a most wise economy, which utilised the sun's heat where it was sufficient for the purpose, and where artificial heat could only be applied at too great a cost. The makers of sunburnt bricks in Assyria and Egypt certainly understood the use of fire as well as we do, and it may be well for us if we can turn the solar rays to equally good account."

He adds:—

"And finally, our knowledge of the extent to which iron has been used in the past, and of the circumstances under which the art of working it may have been lost in various localities, is so limited by the perish-able nature of the metal that it is never safe to form positive opinions about it from merely negative evidence. This has been forcibly illustrated by the discoveries of ancient iron-work in Assyria, and again by the great iron column found in Delhi, apparently the work of the fourth century, a cast of which has just been placed in the South Kensington Museum. This column is a solid shaft of wrought iron, more than fifty feet long, and about eighteen inches in diameter. No other piece of iron-work at all like it has been found in the east; and two things are made clear by its discovery. It shows that the manufacture of iron in large masses was practised in India at least two thousand years ago; for the art could not be in its infancy when this column was made; and it also shows that the old iron-work has disappeared, leaving no tradition of its former state. Nothing of any considerable size in iron has been made in India in recent times."

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"Observe, too, the special feature in America. Its civilisation once lost was never recovered till help came from without, in the shape of European intercourse and colonisation. To be isolated is plainly to lose the power of recovery, and we may well believe, from the example of Australia and equatorial Africa, that the longer the isolation the more profound will be the decay."

Mr. Herbert Spencer himself makes the following noteworthy admissions. He says of savages:—*

Mr. Herbert Spencer's.

"Probably most of them, *if not all of them*, had ancestors in higher states; and among their beliefs remain some which were evolved during those higher states. While the degradation theory, as currently held, is untenable, the theory of progression, taken in its unqualified form, seems to me untenable also. If, on the one hand, the notion that savagery is caused by lapse from civilisation, is irreconcilable with the evidence; there is, on the other hand, inadequate warrant for the notion that the lowest savagery has always been as low as it is now. It is quite possible, and, I believe, highly probable, that retrogression has been as frequent as progression."

He also adds:—†

"That supplanting of race by race, and thrusting into corners such inferior races as are not exterminated, which is now going on so actively, and which has been going on from the earliest recorded times, must have been ever going on. And the implication is that remnants of inferior races, taking refuge in inclement, barren, or otherwise unfit regions, have retrograded."

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* 'Principles of Sociology,' vol. i. p. 106.

† *Op. cit.* p. 109.

It may well be asked, why then does Mr. Spencer, in the teeth of evidence, believe in the primitive and original bestiality of man? He does so simply in consequence of the exigences of the theory he adopts, but we, who are bound in the fetters of no such theory, are at liberty to appreciate facts at whatever may be their just value. Mr. Spencer's admissions are, however, extremely important.

Mr. Darwin's.

Mr. Darwin also admits:[*] "The problem of the first advance of savages towards civilisation is at present much too difficult to be solved." He also adds:[†] "Many nations, no doubt, have fallen away in civilisation," though he doubts their falling into utter barbarism. Finally he says:[‡] "The inhabitants of Tierra del Fuego, the Cape of Good Hope, and Tasmania, in the one hemisphere, and of the Arctic regions in the other, must have passed through many climates and changed their habits many times." One may well ask, why then may they not have degenerated?

Degradation certain.

Thus we may be *certain* that some savages have been degraded from a higher level, and this certainty establishes an *à priori* probability that all have been so. Such degradation would not, however, be inconsistent with the existence of a considerable amount of progress in some places side by side with a wider degradation. The New Zealanders show evidence of a possible degradation through changed conditions, as they doubtless at one time inhabited a warmer clime. They show[§] this by their use of the well-known Polynesian word "niu" (cocoa-nut) for different kinds of divination, thus keeping "up a trace of the time when their ancestors in the tropical islands had them, and divined by them."

How soon the use even of stone implements may be forgotten is proved by Erman in Kamskatka,[||] who got there a fluted prism of obsidian; "but though one would have thought that the comparatively recent use of stone instruments in the country would have been still fresh in the memory of the people, the natives who dug it up had no idea what it was.'' Again: "The Fuegians* have for centuries used a higher method" of making fire than have the Patagonians. This habit looks very much like the *survival* of a higher culture as to such practice in the midst of a wide-spread degeneracy. Such an explanation is strengthened by the following remark† about the Fuegians: "This art of striking fire instead of laboriously producing it with the drill, is not, indeed, the only thing in which the culture of this race stands above that of their northern neighbours," their canoes also being of superior quality. Mr. Tylor thinks that the South Australians may have learnt their art of making polished instruments of green jade from "some Malay or Polynesian source," instead of its having survived the wreck of a higher culture, as the fire-making art of the Fuegians has probably done. But such acquisition is a mere possibility, and experience shows us how often such arts are *not* learnt even when we know for certain that the opportunity of learning them has been offered. Thus our author remarks,‡ that the North Americans never learnt the art of metal work, &c., from the Europeans of the tenth century. That the belief in a persistence of social conditions after death, before referred to, may be a degradation, is shown by the spread of modern "spiritism," which has widely propagated that belief amongst people whose ancestral creed taught a very different doctrine.

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[*] 'Descent of Man,' vol. i. p. 167.

[†] *Op. cit.* p. 181.

[‡] *Op. cit.* p. 136.

[§] 'Primitive Culture,' vol. i. p. 73.

[||] 'Researches into the Early History of Mankind,' p. 207.

A curious proof of degradation of one kind or another is exemplified by the ceremonial purifications practised by the Kafirs. Respecting such Mr. Tylor remarks:§ "It is to be noticed that these ceremonial practices have come to mean something distinct from mere cleanliness. Kafirs who will purify themselves from ceremonial uncleanness by washing, are not in the habit of washing themselves or their vessels for ordinary purposes, and the dogs and the cockroaches divide between them the duty of cleaning out the milk-baskets." Therefore here one of two things must be conceded. We have either a case of degradation and degeneration from earlier cleanliness, or else there must have been an original spiritual meaning in certain primitive washings pointing to a higher religious condition than that at present existing amongst those who practise the ceremonies in question. Again, the legend of the World Tortoise* may be but a degradation, and have meant, as Mr. Tylor suggests, to express the hemispherical heavens overarching the flat expanded plain of earth.

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* 'Researches into the Early History of Mankind,' pp. 245, 246.

† *Ibid.* p. 259. ‡ *Ibid.* p. 205.

§ 'Primitive Culture,' vol. ii. p. 393.

Sir John Lubbock presents to us data which, in fact, also speak of degradation in a more northern part of Africa, namely, amongst the Christians of Abyssinia. He quotes† Bruce as saying that there is "no such thing as marriage in Abyssinia, unless that which is contracted by mutual consent, without other form, subsisting only till dissolved by dissent of one or other, and to be renewed or repeated as often as it is agreeable to both parties, who, when they please, live together again as man and wife, after having been divorced, had children by others, or whether they have been married, or had children with others or not. I remember to have once been at Koscam in presence of the Iteghe (the queen), when, in the circle, there was a woman of great quality, and seven men who had all been her husbands, none of whom was the happy spouse at that time."‡ Sir John significantly couples with this quotation another to the effect that, for all this, "there is no country in the world where there are so many churches."§ Now when Christianity was first accepted by these Christians their practice must have been very different; and, therefore, we have here an unquestionable case of Christian degeneracy parallel with but carried further than the analogous religious degeneracy of Portugal and its transatlantic offspring Brazil —a degeneracy manifestly due to the jealousy felt by those States of the controlling action of the Head of the church and consequent tendency to schism. In all these cases, then, more or less religious *isolation* has been the prelude to degeneracy.

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* 'Researches into the Early History of Mankind,' p. 333.
† 'The Origin of Civilisation,' p. 57.
‡ 'Bruce's Travels,' vol. iv. p. 487.
§ *Ibid.* vol. v. p 1.

There is, then, much reason to think that degeneracy may have been both great in degree and widespread in its effects, so as to account by degradation for the existing states of all the various tribes of savages which discovery has made known to us. But the maintenance of this position, it may be remarked by-the-way, is by no means necessary to justify the religious belief of even the most orthodox Christians. Orthodoxy does not by any means necessarily conflict with such views as those put forward by Messrs. Tylor and Lubbock. All traces now, or to be hereafter, discovered of ancient man, may indicate *ascent* and progress, and all existing savages may be *ascending* from still lower levels, and yet the first man may, notwithstanding, have been all that theology asserts that he was. Nay more, his progeny may none the less have preserved for a considerable period a high degree of direct, simple, moral elevation in an age of stone, and yet have been the ancestors of races who fell below the level of any savages now existing on the earth. In theology Adam stands in a category of his own, and was actually all that it became him as man to be, having the full and perfect use of reason in the first moment of his existence. But it is impossible to argue from Adam even to his immediate descendants, as the difference between their states is a difference not of degree but of kind. According to the strictest theology, part even of Adam's knowledge was acquired, not infused, and, therefore, took time and depended upon the occurrence of opportunities. His descendants were naturally in a state of mere ignorance, to be removed only by education either by way of what is technically called *disciplina* or else by *inventio.* Now as regards their degenerate descendants, the *Homines sylvatici,* these were,

Adam.

His descendants.

by the hypothesis, in a position which deprived them of the first of these influences, and circumstances might well have rendered their power of *inventio* inoperative and practically futile. Thus some might have remained stationary, or have continued to retrograde till discovered by civilised man, while others more favourably circumstanced might have again spontaneously advanced by their own *inventio* and been found by discoverers in a positively ascending and improving condition. Nothing, therefore, which ethnology or archæology can demonstrate can conflict with Christian doctrine, since the question concerning the mental condition of Adam is one utterly beyond the reach of any physical science, while any facts which science can prove concerning *Homo sylvaticus* will be welcomed by theologians as tending to throw light upon the condition of his descendants, respecting which question there is complete freedom of opinion.

It is physical science, not theology, which inclines me to assign a greater scope to degeneration than that assigned to it by the authors herein referred to. As has been said, instances of degeneration are before our eyes to-day in Europe, and even the periodical literature of our own country is continually giving vent to opinions (such, above all, as those of the Agnostics), which have but to spread predominantly to render our degradation certain.

France of the Regency and Pagan Rome long ago demonstrated how easily the most profound moral corruption can co-exist with the most varied appliances of a complex civilisation. The peasants of the Tyrol, on the other hand, serve equally well to demonstrate how pure and lofty a morality, and how really refined a mental civilisation may co-exist with very great simplicity in the adjuncts and instruments of social life. We have but to develop this idea somewhat further to see a family of the stone age, clothed in a few skins, ignorant of the sciences, and innocent of all but the rudest art, yet possessed of a moral integrity but very exceptionally present amidst the population of the greatest cities of modern days.

But instances are easily to be found of the co-existence of moral excellence accompanied by the rudest condition of life with respect to the mere appliances of physical well-being. Mr. Tylor tells* us that the wild Veddahs of Ceylon, though extremely barbarous as to their dwellings, clothing, and use of the fire-drill, "are most truthful and honest," and "their monogamy and conjugal fidelity contrast strongly with the opposite habits of the more civilised Singhalese." Sir John Lubbock has collected the following particulars respecting the social state of the Esquimaux, a people so peculiarly interesting to us in this inquiry because by some deemed to be the last survivors of an ancient miocene race:—

Rude people may be moral.

"Captain Parry gives us the following pictures of an Esquimaux hut. 'In the few opportunities we had of putting their hospitality to the test we had every reason to be pleased with them. Both as to food and accommodation, the best they had were always at our service; and their attention, both in kind and degree, was everything that hospitality and even good breeding could dictate. The kindly offices of drying and mending our clothes, cooking our provisions, and thawing snow for our drink, were performed by the women with an obliging cheerfulness which we shall not easily forget, and which demanded its due share of our admiration and esteem. While thus their guest I have passed an evening not only with comfort, but with extreme gratification; for with the women working and singing, their husbands quietly mending their lines, the children playing before the door and the pot boiling over the blaze of a cheerful lamp, one might well forget for the time that an Esquimaux hut was the scene of this domestic comfort and tranquillity; and I can safely affirm, with Cartwright, that, while thus lodged beneath their roof, I know no people whom I would more confidently trust, as respects either my person or my property, than the Esquimaux.' Dr. Rae,† who had ample means of judging, tells us that 'the Eastern Esquimaux are sober, steady, and faithful, . . . provident of their own property and careful of that of others when under their charge. . . . Socially they are lively, cheerful, and chatty people, fond of associating with each other and with strangers, with whom they soon become on friendly terms, if kindly treated. . . . In their domestic relations they are exemplary. The man is an obedient son, a good husband, and a kind father. . . . The children when young are docile. . . . The girls have their dolls, in making dresses and shoes for which they amuse and employ themselves. The boys have miniature bows, arrows, and spears. . . . . When grown up they are dutiful to their parents. . . . Orphan children are readily adopted and well cared for until they are able to provide for themselves.' He concludes by saying: 'The more I saw of the Esquimaux the higher was the opinion I formed of them.'"—*The Origin of Civilisation*, p. 343.

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* 'Primitive Culture,' vol. i. p. 45.

† 'Trans. Eth. Soc. 1866,' p. 138.

Third new subject, community of nature.

The quotations just given bring us directly to the explicit consideration of our fifth inquiry, the answer to which has been already so much anticipated—that, namely, respecting the existence of a community of nature amongst all the most diverse races of mankind. Here again we must carefully bear in mind the inaccuracy and the tendency to exaggeration so common with travellers, as well as their liability to be intentionally deceived. Thus Mr. Oldfield showed to some New Hollanders a drawing of one of their own people, which they asserted to be intended to represent not a man but a ship or a kangaroo, or other very different object. Of this story Sir John Lubbock shrewdly remarks:* "It is not, however, quite clear to me that they were not poking fun at Mr. Oldfield." A similar explanation is probably available in some other cases also. The absence of certain arts or customs in a given area at a given early period, by no means necessarily implies that they had not previously existed. The necessity of caution is shown by the following remark † of Sir John Lubbock concerning the pictorial art: "It is somewhat remarkable that while even in the Stone period we find very fair drawings of animals, yet in the latest part of the Stone age, and throughout that of Bronze, they are almost entirely wanting, and the ornamentation is confined to various combinations of straight and curved lines and geometrical patterns." In the two preceding pages the same author relates to us different curious modes of salutation; but all such curious customs prove the essential similarity and rationality of man, and form no approximation to a brutal condition, in which "salutation" is unknown. Sir John Lubbock gives* the following as an instance of remarkable superstition: "The natives near Sydney made it an invariable rule never to whistle when beneath a particular cliff, because on one occasion a rock fell from it and crushed some natives who were whistling underneath it." It is not clear, however, that this was not rather a case of prudence, which many Europeans would be inclined to imitate. Sir John Lubbock also quotes with approval from Mr. Sproat the opinion that the difference between the savage and the cultivated mind is merely between the more or less aroused condition of the one and the same mind. The quotation is made† in reference to the Ahts of North-Western America: "The native mind, to an educated man, seems generally to be asleep; and, if you suddenly ask a novel question, you have to repeat it while the mind of the savage is awakening, and to speak with emphasis until he has quite got your meaning."

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* 'Prehistoric Times,' p. 428.
† 'The Origin of Civilisation,' p. 25.

The low arithmetical power possessed by many tribes has been much spoken of; but, in fact, what is really remarkable is, that this power, however low, really exists in all. If any tribe could be found without the conception "number" at all, and therefore unable to count two, that would indeed show the existence of an essential diversity; but no one has ventured to assert that such a tribe has been discovered. Those who have examined the remains of our own ancestors of the Bronze period—their elaborate ornaments, their ceremonial weapons—can hardly have avoided arriving at the conclusion that the difference between them and the Englishmen of to-day can have been but trifling in the extreme. An absurdly exaggerated idea of the special importance of our own social condition and of the value of the merely material appliances of civilisation can alone induce an opposite conclusion. It is an analogous superficiality which also tends to break down the barrier between man and brute by what Mr. Herbert Spencer calls "inverted anthropomorphism;" and with respect to which some good remarks* are made by Mr. Tylor, who tells us:—

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* 'The Origin of Civilisation,' p. 188.

† *Ibid.* p. 5.

> "Uncivilised man deliberately assigns to apes an amount of human quality which to modern naturalists is simply ridiculous. Every one has heard the story of the negroes declaring that apes can speak, but judiciously hold their tongues lest they should be made to work; but it is not generally known that that is found as serious matter of belief in several distant regions—West Africa, Madagascar, South America, &c. —where monkeys or apes are found. . . . On the other hand, popular opinion has under-estimated the man as much as it has over-estimated the monkey. We know how sailors and emigrants can look on savages as senseless, ape-like brutes, and how some writers on anthropology have contrived to make out of the moderate intellectual difference between an Englishman and a negro something equivalent to the immense interval between a negro and a gorilla. Thus we can have no difficulty in understanding how savages may seem mere apes to the eyes of men who hunt them like wild beasts in the forests, who can only hear in their language a sort of irrational gurgling and barking, and who fail totally to appreciate the real culture which better acquaintance always shows among the rudest tribes of man."

Again, he adds:—†

> "The sense of an absolute psychical distinction between man and beast, so prevalent in the civilised world, is hardly to be found among the lower races."

Thus the view, so popular to-day, as to the community of nature between man and brutes is really a reversion towards savage thought. As to man, considered without reference to lower animals, Mr. Tylor declares himself very decidedly in favour of the substantial community of nature existing in the most divergent human races. He pronounces‡ as follows: "The state of things amongst the lower tribes which presents itself to the student, is a *substantial similarity* in knowledge, arts and customs, running through the whole world. Not that the whole culture of all tribes is alike—far from it; but if any art or custom belonging to a low tribe is selected at random, it is twenty to one that something substantially like it may be found in at least one place thousands of miles off, though it very frequently happens that there are large portions of the earth's surface lying between, where it has not been observed. Indeed there are few things in cookery, clothing, arms, vessels, boots, ornaments, found in one place, that cannot be matched more or less nearly somewhere else." Respecting the alleged ignorance of fire in some races, he observes:* "It is likely that the American explorers may have misinterpreted the surprise of the natives at seeing cigars smoked, and fire produced from flint and steel, as well as the eating of raw fish, and the absence of signs of cooking in the dwellings." Wilkes, in the 'Narrative of the United States' Exploring Expedition' (1838–42), has given "ignorance of fire" as an interpretation of such observed phenomena; and yet, as Mr. Tylor remarks, "curiously enough, within the very work particulars are given which show that *fire* was in reality *a familiar thing in the island!*" It is probable that the same error has occurred in other instances.

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* 'Primitive Culture,' pp. 342, 343. † *Op. cit.* vol. i. p. 423.

‡ 'Researches into the Early History of Mankind,' p. 169.

The last-named author even thinks† that the Fijians have themselves *invented* an eating fork, and he reminds us‡ how our practices of stopping teeth with gold and dressing fish *en papillotte* have been anticipated by the ancient Egyptians on one hand, and by the Australians (with bark for paper) on the other.

But it would be difficult to cite stronger testimony than that given by Mr. Tylor to the community of nature in different races under the most diverse physical conditions, judging from unity of products, gesture, language, customs, &c., although § "We might reasonably expect that men of like minds, when placed under widely different circumstances of country, climate, vegetable and animal life, and so forth, should develop very various phenomena of civilisation."

Although Mr. Tylor ventures "to judge in a rough way of an early condition of man, which from our" [his] "point of view is to be regarded as a primitive condition, whatever yet earlier state may in reality have lain behind it," he fully admits that, as far as research carries us, the same human characteristics come again and again before us on every hand. He concludes with the following emphatic tribute to the essential unity of man in all ages, all climes, and all conditions:—

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* *Op. cit.* p. 231.

† *Op. cit.* p. 175.

‡ *Op. cit.* p. 173.

§ *Op. cit.* p. 362.

> "The historian and the ethnographer must be called upon to show the hereditary standing of each opinion and practice, and their inquiry must go back as far as antiquity or savagery can show a vestige, for there seems no human thought so primitive as to have lost its bearing on our own thought, nor so ancient as to have broken its connection with our own life."

With these declarations we may well rest contented, and conclude—from the absence of opposing evidence, as well as from such admissions on the part of a witness whose bias is in an opposite direction—that one common fundamental human nature is present in all the tribes and races of men (however contrasted in external appearance) which are scattered over the whole surface of the habitable globe.

Conclusions.

We are now in a position to draw our conclusions from the foregoing data, and state the results which the teaching of Mr. Tylor and Sir John Lubbock seem to force upon us. The works referred to and quoted have been, as we said, selected for citation because their authors are not only most justly esteemed for their information and capability, not only because they are representative men in ethnology and archæology, but also because their bias is *favourable* to the monistic view of evolution, and their evidences, and admissions made by them which tell against that view, can be more safely relied on. We have considered facts brought forward by one or other of them, and judgments expressed on those facts with regard to speech, morality, religion, progress, and community of nature in the most diverse tribes of mankind, with a view of discovering (1) whether any evidence can be adduced of man's existence in a brutal or irrational condition; (2) whether the evidence points in the direction of such a condition in the past; and (3) whether any men now exist less remote from beasts than from the highest individuals of mankind. We have found, as regards *language*, not only an essential agreement amongst all men, but that even the dumb prove by their gestures that they are possessed of the really important part of the faculty (the *verbum mentale*), though accidentally deprived of the power of giving it verbal expression (the *verbum oris*). As to *Morals*, we have found that not only are all races possessed of moral perception, but even that their fundamental moral principles are not in contradiction with our own.

Concerning *Religion*, we have seen that religious conceptions appear to exist universally amongst all races of mankind, though often curiously aborted or distorted, and often tending to extreme degradation after periods during which a higher level had been maintained. Respecting *Community of Nature*, we have been able to quote from Mr. Tylor assertions of the most unequivocal character. Finally, as to *Progress*, we have found cause to believe that "*Retrogression*" may have been much greater and more extensive than our authors are disposed to admit; but that however that may be, and even if their views on this subject are correct, as to existing races, such views, if established, would not constitute one iota of proof that the Christian doctrines as to man, his origin and nature, are erroneous.

From the absence of any positive proof as to a brutal condition of mankind, and from the absence of even any transitional stage, a presumption, at the least, arises that no such transition ever took place. This absence, also (there being at the same time so much positive evidence of essential community of nature amongst all men), clearly throws the *onus probandi* on those who assert the fact of such transition in the past. At the least they must show that the asserted transition is not only possible but also probable; and both demonstrations, I am confident, are beyond their power.

It seems, then, that in the sciences we are considering, namely, ethnology and archæology, the most recent researches of the most trustworthy investigators show that the expectations of the supporters of the dualistic hypothesis are fulfilled, while those of the favourers of the monistic view are disappointed.

The final result therefore is that ethnology and archæology, though incapable of deciding as to the possibility of applying the monistic view of evolution to man, yet, as far as they go, *oppose* that application. Thus the study of man past and present, by the last-mentioned sciences, when used as a test of the adequacy of the THEORY OF EVOLUTION, tends to show (though the ultimate decision, of course, rests with philosophy) that it is inadequate, and that another factor must be introduced of which it declines to take any account—the action, namely, of a DIVINE MIND as the direct and immediate originator and cause of the existence of its created image, the mind of man.

Such being the result of the inquiry we have undertaken, the assertors of man's dignity are clearly under no slight obligations to Sir John Lubbock and Mr. Tylor for their patient, candid, and laborious toil. But if such is the case with regard to these writers, how much greater must be the obligation due to that author who has so profoundly influenced them, and whose suggestive writings have produced so great an effect on nineteenth-century Biology.

A deep debt of gratitude will indeed be one day due to Mr. Darwin—one difficult to over-estimate. This sentiment, however, will be mainly due to him for the indirect result of his labours. It will be due to him for his having, in fact, become the occasion of the *reductio ad absurdum* of that system which he set out to maintain—namely, the origin of man by natural selection, and the sufficiency of mechanical causes to account for the harmony, variety, beauty, and sweetness of that teeming world of life, of which man is the observer, historian, and master.

But the study of savage life has taught us much.

Our poor obscurely thinking, roughly speaking, childishly acting, impulsive cousin of the wilds, the *Homo sylvaticus*, is not a useless tenant of his woods and plains, his rocks and rivers. His humble testimony is of the highest value in supporting the claims of his most civilised brothers to a higher than a merely brutal origin.

The religion of Abraham and Chrysostom, the intellect of Aristotle and Newton, the art of Raphael, of Shakespeare, of Mozart, have their claims to be no mere bestial developments, supported by that testimony. Through it these faculties are plainly seen to be different *in kind* from complex entanglements of merely animal instincts and sensible impressions. The claims of man, as we know him at his noblest, to be of a fundamentally different nature from the beasts which perish, become reinforced and reinvigorated in our eyes, when we find the very same moral, intellectual, and artistic nature (though disguised, obscured, and often profoundly misunderstood) present even in the rude, uncultured soul of the lowest of our race, the poor savage—*Homo sylvaticus.*

Man's body.

Having considered that which is the really essential question—man's intellectual nature—we may now pass on to the subordinate question concerning peculiarities of man's bodily frame, and the value and signification of the resemblances presented by it to the various structures which are found to exist in lower members of the animal kingdom.

Mr. Darwin treats us to a very interesting account, not only of man's anatomy, but also of the habits, diseases, and parasites (internal and external) of man, together with the process of his development. He points out (vol. i. p. 11) not only the close similarity even of cerebral structure between man and apes, but also how the same animals are "liable to many of the same diseases as we are; thus Rengger, who carefully observed for a long time the *Cebus Azaræ* in its native land, found it liable to catarrh, with the usual symptoms, and which, when often recurrent, led to consumption. These monkeys suffered also from apoplexy, inflammation of the bowels, and cataract in the eye. The younger ones, when shedding their milk-teeth, often died from fever. Medicines produced the same effect on them as on us. Many kinds of monkeys have a strong taste for tea, coffee, and spirituous liquors; they will also, as I have myself seen, smoke tobacco with pleasure." He also tells us of baboons which, after taking too much beer, "on the following morning were very cross and dismal, held their aching heads with both hands, and wore a most pitiable expression: when beer or wine was offered them they turned away with disgust, but relished the juice of lemons." He also notices the process of development in man, with the transitory resemblances it exhibits to the immature conditions of other animals, and he mentions certain muscular abnormalities.

As to the process of development:—

His embryonic development.

> "Man is developed from an ovule, about the 125th of an inch in diameter, which differs in no respect from the ovules of other animals. The embryo itself, at a very early period, can hardly be distinguished from that of other members of the vertebrate kingdom. At this period the arteries run in arch-like branches, as if to carry the blood to branchiæ, which are not present in the higher vertebrata, though the slits on the sides of the neck still remain marking their former position. At a somewhat later period, when the extremities are developed, the feet of lizards and mammals, wings and feet of birds, no less than the hands and feet of man, all arise from the same fundamental form."

Amongst other points he adds:—

> "The heart first exists as a simple pulsating vessel; the excreta are voided through a cloacal passage; and the os coccyx projects like a true tail, extending considerably beyond the rudimentary legs."—Vol. i. p. 16.

Again, as to more or less useless parts which represent important structures in lower animals, he says:—

> "Rudiments of various muscles have been observed in many parts of the human body; and not a few muscles, which are regularly present in some of the lower animals, can occasionally be detected in man in a greatly reduced condition. Every one must have noticed the

power which many animals, especially horses, possess of moving or twitching the skin; and this is effected by the panniculus carnosus. Remnants of this muscle in an efficient state are found in various parts of our bodies; for instance, on the forehead, by which the eyebrows are raised. The *platysma myoides*, which is well developed on the neck, belongs to this system, but cannot voluntarily be brought into action. Professor Turner, of Edinburgh, has occasionally detected, as he informs me, muscular fasciculi in five different situations, namely, in the axillæ, near the scapulæ, &c., all of which must be referred to the system of the panniculus. He has also shown that the *musculus sternalis* or *sternalis brutorum*, which is not an extension of the *rectus abdominalis*, but is closely allied to the panniculus, occurred in the proportion of about 3 per cent. in upwards of 600 bodies."—Vol. i. p. 19.

Mr. Darwin brings forward, amongst other things, an observation of Mr. Woolner, the sculptor, as to a small projection of the helix or outermost fold of the human ear, which projection, Mr. Darwin says, " we may safely conclude" to be "a vestige of formerly pointed ears—which occasionally reappears in man" (vol. i. p. 23). Very many other interesting points are noted which it would be superfluous here to recapitulate.

Superficiality of Mr. Darwin's remarks on these subjects.

It would be superfluous because, however anatomically interesting, they are really beside the question. They may, indeed, and they probably will produce a considerable effect on readers who are not anatomists, but in fact the whole and sole result is to show that man *is* an animal. That he is such is denied by no one, but has been taught and accepted since the time of Aristotle. I remember on one occasion meeting at a dinner-table a clever medical man of materialistic views. He strongly impressed the minds of some laymen present by an elaborate statement of the mental phenomena following upon different injuries, or abnormal or diseased conditions of different parts of the brain, until one of the number remarked as a climax, "Yes; and when the brain is entirely removed, the mental phenomena cease altogether"—the previous observations having only brought out vividly what no one denied, viz., that during this life a certain integrity of bodily structure is requisite for the due exercise of the mental powers. Thus Mr. Darwin's remarks are merely an elaborate statement of what all admit—namely, that man is an animal, coupled with a sort of implied assertion that he is no more, and that the mode of origin of his visible being must be the mode of his origin as a whole—a conclusion of which I should not question the legitimacy if I could accept Mr. Darwin's views of man's mental powers.

Necessary physical conditions of animal rationality as to structure.

But, once more, it is conceded on all hands that man is an animal, though a rational one. Let us then assume, for argument's sake, that he was suddenly and miraculously created. How far do any of the facts as to his structure or development from the embryonic condition conflict with such a view? What, from such an origin, ought we to expect?

If man, that is, if a rational animal, was to be created at all, he must have been made more or less like *some* other animal; and for the exercise of rationality in a corporeal frame he must have had a body capable of expressing the unspoken word of thought (the *verbum mentale*) by convenient external signs of the requisite multitudinous variety. Moreover, since in a rational animal the exercise of the intellect must depend on sensations prodigious in number and most complexly associated, such an animal must possess a voluminous nervous system, with the most complex inter-relations between its different parts.

Man, then, could hardly have been made a member of any of the invertebrate classes. For similar reasons, we may fairly conclude that he could not have been made a member of the cold-blooded division of the vertebrata—reptiles and fishes; nor, considering the restricted utility of birds' pectoral limbs (their wings), could his intellectual activity have been fittingly housed within the body of any kind of bird. We are reduced, then, to the class mammalia as the only one affording a type of animal structure available to minister to a reflective, self-conscious nature. Amongst mammals, the whole group of marine forms (whales, porpoises, seals) and that of hoofed beasts may be similarly excluded, as also those in which the cerebral structure is of manifest inferiority. There remains, then, only the carnivorous, or flesh-eating brutes (lions, bears, wolves, &c.) to compete with the order of apes and lemurs for the dignity of furnishing the type of the *animal rationale.* The manifest superiority for such a purpose of the latter group over the carnivora must be manifest to any one who considers the subject. Then we are landed at once in the order Primates.

Man's resemblance to apes.

But which forms of that order might we expect the rational animal to resemble? Surely not those which by their small cerebral development as well as by a variety of other characters manifest their close affinity to groups which we have found reason to reject. One almost necessary character for the animal in question, namely, an upright posture, to set one pair of limbs free to minister to the teeming brain, at once determines that he shall resemble those apes which approximate towards a vertical attitude; in other words, that he shall resemble what we call an anthropoid ape. But though man does resemble such anthropoid apes more closely than such apes resemble the lowest forms of the order, and though his zoological rank is merely that of a family, nevertheless he does not predominantly resemble any one of them. Thus some of the lower apes resemble man more than they do the anthropoid ones in the length of the arm and hand compared with that of the spine; while in the length of the leg without the foot, compared with that of the arm without the hand, he is equalled only by certain lemurs. The baboons (the lowest of the group of apes of that family which stands next to man) exceed all the higher apes in resemblance to man, in the sigmoid curvature of the spine; in the angle formed by the sacrum with the spine; in the concavity of the visceral surface of the sacrum; in the convexity of the bones of the nose; in the development of the styloid process; in the transverse breadth of the pelvis compared with its depth; in the greater descent of the inner condyle of the thigh-bone; in the length of the foot compared with that of the backbone, and in the angle formed by the axis of the cranium with the axis of the face.

Some or other even of the monkeys of the New World resemble man more than the monkeys of the Old World (which in general are more like him) in the following characters:—(1) No ischial callosities; (2) no cheek-pouches; (3) copious beard and whiskers (*Sakis*); (4) hair of arms directed as in man; (5) cranium more rounded; (6) cranium higher; (7) face relatively smaller; (8) foramen magnum situate more forwardly; (9) the length of the thumb compared with that of the hand (*Marmosets*); (10) the length of the thigh-bone compared with that of the backbone (spider-monkeys); (11) the greater descent of the inner condyle of the femur (spider-monkeys); (12) the length of the shinbone compared with that of the femur (spider-monkeys); (13) the length of the hallux compared with that of the spine (*Sakis*); (14) the presence of the bridging convolutions (spider-monkeys); (15) the very overlapping cerebrum (squirrel-monkeys); (16) the oblique ridge on the upper grinders (howling monkeys).

The half-apes (*Lemuroidea*) differ, as before said, from both man and true apes in points so numerous and so significant that there can be no question as to their great inferiority and the vast chasm which exists between the two sub-orders.

Nevertheless, we find amongst the half-apes certain characters which resemble those of man more than do most, sometimes even more than do any, of the characters exhibited by the true apes.

Thus the typical lemurs and the indris have a more completely opposable and better-developed thumb than any ape. In the slender loris we find an absence of the extra-interlocking processes (metapophyses and anapophyses) of the backbone, the spinous processes of which do not converge (fore and aft) towards a central point; the pisiform bone of the wrist is smaller than in any ape; the proportion borne by the thumb to the hand in length is more human, as is the form assumed by the ischium, and the relative size of the foot compared with the leg. In the *Indrisinæ* and in *Lepilemur* we find but eight carpal bones (a character found in no other Primates save man, the chimpanzee and the gorilla), and the most human proportional length of both the thumb and the index finger compared with the length of the spine. We also find in the short-tailed indris the length of the femur compared with that of the haunch-bone most human, as also the length of the foot compared with that of the hand, and the near approach made by the length of the "great toe" to the actually longest toe of the foot. In the typical genus *Lemur* we find the proportion (in length) of thigh-bone to the upper arm-bone most human, as well as that of the longest toe to the backbone.

In the slow lemur (*Nycticebus*), the length of the shin-bone bears a relation to that of the thigh-bone more human than in any other species below man; while in other kinds of half-apes we meet with a development of the anterior inferior spinous process of the ilium more like that of man than we find in any ape; also upper grinding teeth furnished with an "oblique ridge" as in man, and sometimes an almost equality of vertical development in the teeth, and even an absence of any interspace between them or diastema.

Having noted some of the structural resemblances and differences presented by the different forms of Primates, we may now consider and appraise their value, as bearing upon the question of the "origin of species," and especially upon the asserted "descent of man" from some "non-human" ape ancestor. The question, that is, as to man's body; for as to the totality of his nature no mere anatomical examinations will enable us to decide—that is the task of psychology and philosophy generally.

In the first place, it is manifest that man, the apes, and the half-apes cannot be arranged in a single ascending series, of which man is the term and culmination.

We may, indeed, by selecting one organ or one set of parts, and confining our attention to it, arrange the different forms in a more or less simple manner. But if all the organs be taken into account, the cross relations and interdependencies become in the highest degree complex and difficult to unravel.

This has been more or less generally recognised; but it has been distinctly put forward by Mr. Darwin, and widely accepted, that the resemblances between man and apes are such that man may be conceived to have descended from some ancient members of the broad-breastboned group of apes, and the gorilla is still popularly credited with the closest relationship to him which is to be found in all existing apes.

As to the latter opinion, evidence has elsewhere been adduced* to show that it is quite untenable.

As to Mr. Darwin's proposition, much remains to be said. But it is certainly true that, on the whole, the anatomical characters of man's body have much more resemblance to those common to the latisternal group than to those presented by any other section of the order Primates.

But, in the first place, we should consider what evidence of common origin does community of structure afford?

The human structural characters are shared by so many and such diverse forms, that it is impossible to arrange even groups of genera in a single ascending series from the aye-aye to man (to say nothing of so arranging the several single genera), if all the structural resemblances are taken into account.

On any conceivable hypothesis there are many similar structures, each of which must be deemed to have been independently evolved in more than one instance.

If the number of wrist-bones be deemed a special mark of affinity between the gorilla, chimpanzee, and man, why are we not to consider it also a special mark of affinity between the indris and man? That it should be so considered, however, would be deemed an absurdity by every evolutionist.

If the proportions of the arms speak in favour of the chimpanzee, why do not the proportions of the legs serve to promote the rank of the gibbons?

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* See 'Man and Apes.' Hardwicke, 1873.

If the "bridging convolutions" of the orang go to sustain its claim to supremacy, they also go far to sustain a similar claim on the part of the long-tailed, thumbless spider-monkeys.

If the obliquely-ridged teeth of Simia and Troglodytes point to community of origin, how can we deny a similar community of origin, as thus estimated, to the howling monkeys and galagos?

The liver of the gibbons proclaims them almost human; that of the gorilla declares him comparatively brutal.

The ear-lobule of the gorilla makes him our cousin; but his tongue is eloquent in his own dispraise.

The slender loris, from amidst the half-apes, can put in many a claim to be our shadow refracted, as it were, through a lemurine prism.

The lower American apes meet us with what seems "the front of Jove himself," compared with the gigantic, but low-browed denizens of tropical Western Africa.

In fact, in the words of the illustrious Dutch naturalists, Messrs. Schroeder, Van der Kolk, and Vrolik, the lines of affinity existing between different Primates construct rather a network than a ladder.

It is indeed a tangled web, the meshes of which no naturalist has as yet unravelled by the aid of natural selection. Nay, more, these complex affinities form such a net for the use of the teleological retiarius as it will be difficult for his Lucretian antagonist to evade, even with the countless turns and doublings of Darwinian evolutions.

But it may be replied, the spontaneous and independent appearance of these similar structures is due to "atavism" and "reversion"—to the reappearance, that is, in modern descendants, of ancient and sometimes long-lost structural characters, which formerly existed in more or less remote hypothetical ancestors.

Let us see to what this reply brings us. If it is true, and if man and the orang are diverging descendants of a creature with certain cerebral characters, then that remote ancestor must also have had the wrist of the chimpanzee, the voice of a long-armed ape, the blade-bone of the gorilla, the chin of the siamang, the skull-dome of an American ape, the ischium of a slender loris, the whiskers and beard of a saki, the liver and stomach of the gibbons, and the number of other characters in which the various several forms of higher or lower Primates respectively approximate to man.

But to assert this is as much as to say that low down in the scale of Primates was an ancestral form so like man that it might well be called an *homunculus;* and we have the virtual pre-existence of man's body supposed, in order to account for the actual first appearance of that body as we know it —a supposition manifestly absurd if put forward as an explanation.

As to development.

The question, however, regarding development may be thought by some to be more important and significant than adult structure. But here again we have but to look facts boldly in the face and fearlessly to consider the possibilities of the case. The body of each man born, must, to resemble an animal at all, originate by a germ and embryo of some kind. For this is the law not only of all animals but even of all plants also.*

Now let us suppose that the embryo of man, instead of taking that course of development which is the law of the class to which he belongs, assumed at once the miniature form and proportions of the adult body. Would this be any proof of miraculous origin, or that man's original appearance was due to another operation than in the case of other animals? Certainly not, for it would be easy for the naturalist to point to many of the lower animals in which such a direct building up of the adult form takes place.

But it is surely natural and congruous that if an animal of the class mammalia was to be formed and endowed with reason, such a being should be made to conform to the universal laws of its class, and that not only in the adult condition of the body but also in its mode of attaining to that adult condition.

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* We are not here considering the question of spontaneous generation.

Similarly as regards disease, effects of stimulants, narcotics, &c., the facts given by Mr. Darwin are simply the consequences of the minute structure and conditions of the tissues and a similarity in animal nature and constitution. If man could freely imbibe prussic acid without harm resulting to his frame, or could receive with impunity the venom of the rattlesnake, he would have rather the mere appearance only of an animal instead of having the nature of one in all its fulness and reality. All the more or less curious facts cited by Mr. Darwin follow necessarily from this principle, calculated as they may be to strike at first the imagination of the unreflecting.

All that can be said to be established by our author is, that if the various kinds of lower animals have been evolved one from the other by a process of natural generation or evolution, that then it becomes highly probable *à priori* that man's body has been similarly evolved; but this, in such a case, becomes equally probable from the admitted fact that he is an animal at all.

Bearing of these matters on man's origin.

It, however, only amounts to an *à priori* probability, and might be reconciled with another mode of origin if there were sufficient evidence (of another kind) in support of such other mode of origin. Mr. Darwin says:—"It is only our natural prejudice, and that arrogance which made our forefathers declare that they were descended from demigods, which leads us to demur to this conclusion" (vol. i. p. 32). But this is not the case; for many demur to his conclusion because they believe that to accept his view would be to contradict other truths which to them are far more evident.

He also makes the startling assertion that to take any other view than his as to man's origin, "is to admit that our own structure and that of all the animals around us, is a mere snare laid to entrap our judgment" (vol. i. p. 32). Mr. Darwin is, I am quite sure, far enough from pretending that he has exhausted the possibilities of the case, and yet could anything but a conviction that the whole field had been explored exhaustively, justify such an assertion? If, without such a conviction, it was permissible so to dogmatise, every theoriser who had attained to a plausible explanation of a set of phenomena might equally make use of the assertion, and say, until a better explanation was found, that to doubt him would be to attribute duplicity to the Almighty.

Mistakes as to reversion.

Some of the instances that Mr. Darwin gives of reversion to brutal ancestry are quite gratuitous. Of the occasional double uterus of the human female he says:—

> "In other and rarer cases, two distinct uterine cavities are formed, each having its proper orifice and passage. No such stage is passed through during the ordinary development of the embryo, and it is difficult to believe, though perhaps not impossible, that the two simple, minute, primitive tubes could know how (if such an expression may be used) to grow into two distinct uteri, each with a well-constructed orifice and passage, and each furnished with numerous muscles, nerves, glands and vessels, if they had not formerly passed through a similar course of development, as in the case of existing marsupials. No one will pretend that so perfect a structure as the abnormal double uterus in woman could be the result of mere chance. But the principle of reversion, by which long-lost dormant structures are called back into existence, might serve as the guide for the full development of the organ, even after the lapse of an enormous interval of time."—Vol. i. page 123.

But if this were really a reversion to marsupial structure, we ought surely more often to meet with reversion to the characters of animals much less removed in time (on Mr. Darwin's theory) than are the Marsupialia. We ought, that is, to meet with, for example, a long tail, or a prehensile hallux, or tusk-like canine teeth, or a completely hairy back, far more often than we do a completely double uterus. Yet such is by no means the case. As to the fancy concerning the inability of an organ to form itself *de novo*, Mr. Darwin may be refuted from his own notes on the very next page, where we read that he was at first similarly disposed to attribute the development of abnormal, erratic mammary glands (breasts placed in unusual parts of the body) to *reversion*, but from observations of Professor Preyer as to the appearance of such structures on *the back* leads our author to candidly admit that his "argument is greatly weakened or perhaps quite destroyed."

The same power which could produce so complex a structure as a mammary gland, in a situation which showed that it was not due to reversion, could also produce the conditions of a completely divided and double uterus.

In attempting to trace man's origin Mr. Darwin has even been betrayed into slight inaccuracies. Thus, in combating the position, advanced in the 'Quarterly Review,'* that the hands of apes had been preformed (with a view to man) in a condition of perfection beyond their needs, he says:—

Other mistakes.

> "On the contrary, I see no reason to doubt that a more perfectly constructed hand would have been an advantage to them, provided, and it is important to note this, that their hands had not thus been rendered less well adapted for climbing trees. We may suspect that a perfect hand would have been disadvantageous for climbing; as the most arboreal monkeys in the world, namely, Ateles in America and Hylobates in Asia, either have their thumbs much reduced in size and even rudimentary, or their fingers partially coherent, so that their hands are converted into grasping-hooks."—Vol. i. p. 140.

In a note, Mr. Darwin refers to the Sindactyle Gibbon as having two of the digits coherent. But these digits are not, as he supposes, digits of the hand but toes. Moreover, though doubtless the Gibbon and spider-monkeys are admirably organised for their needs, yet it is plain that a well-developed thumb is no impediment to climbing, for the strictly arboreal Lemurs are exceedingly well furnished in this respect.

We shall see later † that Mr. Darwin tries to account for man's hairlessness by the help of "sexual selection." He also, however, speculates as to the possibility of his having lost it through heat of climate, saying:—"Elephants and rhinoceroses are almost hairless; and as certain extinct species which formerly lived under an arctic climate were covered with long wool or hair, it would almost appear as if the existing species of both genera had lost their hairy covering from exposure to heat" (vol. i. p. 148).

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* See 'Quarterly Review,' April 1869, p. 392.

† See *infra* the chapter on sexual selection.

This affords us a good example of hasty and inconclusive speculation. Surely it would be quite as rational to suppose that the arctic species had *gained* their coats as that the tropical species had lost theirs. But hasty conclusions are but too frequent in Mr. Darwin's speculations as to man's genealogy—which he calls his "*descent*," though "*ascent*" would be a far more appropriate term.

In fact, Mr. Darwin's power of reasoning seems to be in an inverse ratio to his power of observation. On the whole, we are convinced that, by his 'Descent of Man,' the cause of "Natural Selection" has been rather injured than promoted; and I must confess to a feeling of surprise that the case put before us is not stronger, since we had anticipated some telling and significant facts from Mr. Darwin's biological treasure-house.

A great part of the work may be dismissed as beside the point—as a mere elaborate and profuse statement of the obvious fact, which no one denies, that man is an animal, and has all the essential properties of a highly organised one. Along with this truth, however, we find the assumption that he is *no more* than an animal—an assumption which is necessarily implied in Mr. Darwin's distinct assertion that there is no difference of *kind*, but merely one of *degree*, between man's mental faculties and those of brutes.

I have endeavoured to show that this is distinctly untrue; that not only we are not compelled, but that it is our duty, not to abandon the received position that man is an animal indeed, but the only rational one known to us, and that this is a distinction in *kind*, and fundamental. The estimate I have formed of man's position differs therefore most widely from that of Mr. Darwin.

Mr. Darwin says:* "We must admit that there is a much wider interval in mental power between one of the lowest fishes, as a lamprey or a lancelet, and one of the higher apes, than between an ape and man; yet this immense interval is filled up by numberless gradations." This I cannot admit, since I believe the assertion to be absolutely false. In my view the "immense interval" is between the ape and the man.

Mr. Darwin's remarks as to insects.

Mr. Darwin supports his view by tho analogy of certain insects which, though zoologically allied, differ enormously in the development of their instincts. He says:—

> "Some naturalists, from being deeply impressed with the mental and spiritual power of man, have divided the whole organic world into three kingdoms, the Human, the Animal, and the Vegetable, thus giving to man a separate kingdom. Spiritual powers cannot be compared or classed by the naturalist; but he may endeavour to show, as I have done, that the mental faculties of man and the lower animals do not differ in kind, although immensely in degree. A difference in degree, however great, does not justify us in placing man in a distinct kingdom, as will perhaps be best illustrated by comparing the mental powers of two insects, namely, a coccus or scale insect and an ant, which undoubtedly belong to the same class. The difference is here greater, though of a somewhat different kind, than that between man and the highest mammal. The female coccus, whilst young, attaches itself by its proboscis to a plant; sucks the sap but never moves again; is fertilised and lays eggs; and this is its whole history. On the other hand, ants communicate information to each other, and several unite for the same work, or games of play. They recognize their fellow-ants after months of absence. They build great edifices, keep them clean, close the doors in the evening, and post sentries. They make roads and even tunnels under rivers. They collect food for the community, and when an object, too large for entrance, is brought to the nest, they enlarge the door, and afterwards build it up again. They go out to battle in regular bands, and freely sacrifice their lives for the common weal. They emigrate in accordance with a preconcerted plan. They capture slaves. They keep aphides as

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* 'Descent of Man,' vol. i. p. 35.

> milch cows. They move the eggs of their aphides, as well as their own eggs and cocoons, into warm parts of the nest, in order that they may be quickly hatched; and endless similar facts could be given. On the whole, the difference in mental power between an ant and a coccus is immense; yet no one has ever dreamed of placing them in distinct classes, much less in distinct kingdoms. No doubt this interval is bridged over by the intermediate mental powers of many other insects; and this is not the case with man and the higher apes. But we have every reason to believe that breaks in the series are simply the result of many forms having become extinct."

I have extracted the whole of this passage because it states in the strongest manner what Mr. Darwin considers the most telling points in his favour, while it exhibits as clearly his misapprehensions as to the true significance of man's mental powers.

In the first place the zoological classification universally adopted is a morphological classification. That is to say it is a classification based upon form and structure—upon the number and shape of the several parts of animals, and not at all upon what those parts *do,* the consideration of which belongs to physiology. This being the case we not only may, but *should,* in the field of zoology, neglect all questions of diversities of instinct or mental power, equally with every other power, as is evidenced by the location of the bat and the porpoise in the same class, mammalia and the parrot and the tortoise in the same larger group, Sauropsida.

Looking, therefore, at man with regard to his bodily structure, we not only may, but *should,* reckon him as a member of the class mammalia, and even (we believe) consider him as the representative of a mere family of the first order of that class. But all men are not zoologists; and even zoologists must, outside their science, consider man in his totality and not merely from the point of view of anatomy.

If then I am right in my assertion that man's mental faculties are different *in kind* from those of brutes; and if he is, as we maintain, the only rational animal, then is man, as a whole, to be spoken of by preference from the point of view of his animality, or from the point of view of his rationality?

Surely from the latter, and, if so, we must consider not structure, but action.

Now in the last quoted passage Mr. Darwin seems to concede that a difference in kind *would* justify the placing of man in a distinct kingdom, inasmuch as he says a difference in degree does not so justify; and we have no hesitation in affirming (with Mr. Darwin) that between the instinctive powers of the coccus and the ant there *is* but a difference of degree, and that, therefore, they do belong to the same kingdom, but we contend it is quite otherwise with man.

Mr. Darwin, doubtless, admits that all the wonderful actions of ants are mere modifications of instinct. But if it were not so—if the piercing of tunnels beneath rivers, &c., were evidence of their possession of reason, then far from agreeing with Mr. Darwin, we should say that ants also are rational animals, and that, while considered from the anatomical stand-point they would be insects, from that of their rationality they would rank together with men in a kingdom apart of "rational animals." Really, however, there is no tittle of evidence that ants possess the reflective, self-conscious, deliberate faculty; while the perfection of their instincts is a most powerful argument against the need of attributing a rudiment of rationality to any brute whatever.

Man forms a kingdom by himself.

Thus, then, we seem to have Mr. Darwin on our side when we affirm that animals possessed of mental faculties distinct in kind should be placed in a kingdom apart. And man possesses such a distinction.

Is this, however, all that can be said for the dignity of his position? Is he merely one division of the visible universe co-ordinate with the animal, vegetable, and mineral kingdoms?

It would be so if he was intelligent and no more. If he could observe the facts of his own existence, investigate the co-existences and successions of phenomena, but all the time remain like the other parts of the visible universe a mere floating unit in the stream of time, incapable of one act of free self-determination or one voluntary moral aspiration after an ideal of absolute goodness. But this is not so. Man is not merely an intellectual animal, but he is a free moral agent, and, as such—and with the infinite future such freedom opens out before him—differs from all the rest of the visible universe by a distinction so profound that no one of those which separate other visible beings is comparable with it. The gulf which lies between his being as a whole, and that of the highest brute, marks off vastly more than a mere kingdom of material beings, and man, so considered, differs far more from an elephant or a gorilla than do these from the dust of the earth on which they tread.

Thus, then, in our judgment the author of the 'Descent of Man' has utterly failed in the only part of his work which is really important. Mr. Darwin's errors are mainly due to a radically false metaphysical system in which he seems (like so many other physicists) to have become entangled. Without a sound philosophical basis, however, no satisfactory scientific superstructure can ever be reared; and if Mr. Darwin's failure should lead to an increase of philosophic culture on the part of physicists, we may therein find some consolation for the injurious effects which his work is likely to produce on too many of our half-educated classes.

Unity of human races.

There is another question concerning the various races of man about which only a few words can now be said. Fortunately but few words need be said, since there is much unanimity on the subject between thinkers of very diverse views as to man's origin.

This question is whether the races of man form but one species. Upon this subject the verdicts of evolutionists of the school of Darwin and Huxley are not doubtful. Mr. Darwin says* as to the instability of racial characters: "it may be doubted whether any character can be named which is distinctive of a race and is constant." Again, as to the origin of the existing races from a single pair, he admits † that "with our domestic animals a new race can readily be

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Descent of Man,' vol. i. p. 225.

† *Op. cit.* p. 235.

formed from a single pair." Those men of science who believe that all animals whatever sprang but from a few separate stocks can hardly dispute the singleness of man's origin. Those, on the other hand, who share my views as to the frequently independent origin of different structures may dispute it. The arguments however here advanced in favour of man's unity of nature lend support to the unity of his origin. That original man should have been of a lighter colour than the existing darkest races, and without woolly hair, is indicated (at least on evolutionary principles) by the facts of development in such races. Mr. Darwin tells us* "the newborn negro child is reddish nut-brown, which soon becomes slaty-gray." . . . "The eyes of the negro are at first blue, and the hair chestnut-brown rather than black, being curled only at the ends."

As to the origin of variations in colour, we may, as Mr. Darwin says,† "well reflect" . . . "on the remarkable changes of colour in the plumage of parrots," fed on special food or inoculated with toad poison, "for we can thus see that the fluids of the system, if altered for some special purpose, might induce other strange changes."

In the present state of science, and especially in that of the controversy as to specific origin, it would be a work of supererogation to insist upon the probability, almost amounting to certainty, of the common origin of the whole human race. The question may at least be left until such time as good evidence may be forthcoming of the sterility *inter se* of the descendants of cross-breeds between two widely distinct families of mankind.

What shall be the verdict as to man's origin.

But what should be our final verdict as to the main question here considered—that of the origin of man? We have seen that no arguments adduced by any of the writers quoted suffice to make probable his origin from speechless, irrational, non-moral brutes. But there is evidence to be adduced from high authority directly on the other side. No less a writer than Mr. Wallace, the independent originator and by far the best expounder of the theory of natural selection, differs widely from Mr. Darwin as to the question of man's origin. He contends* that some special agency was needed to produce the human frame. He specially adverts to the peculiar disposition of the hair on man, especially that nakedness of the back which is common to all races of men, and to the peculiar construction of the foot and hand. He tells us, "the hand of man contains latent capacities and powers which are unused by savages, and must have been even less used by palæolithic man and his still ruder predecessors. It has all the appearance of an organ prepared for the use of civilised man, and one which was required to render civilisation possible." Again, speaking of the "wonderful power, range, flexibility, and sweetness of the musical sounds producible by the human larynx," he adds, "The habits of savages give no indication of how this faculty could have been developed" . . . "the singing of savages is a more or less monotonous howling, and the females seldom sing at all." . . . "It seems as if the organ had been prepared in anticipation of the future progress of man, since it contains latent capacities which are useless to him in his earlier condition."

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* 'Descent of Man,' vol. ii. p. 318.

† *Op. cit.* p. 152.

Mr. Wallace's views.

But, indeed, as to this subject, even Mr. Darwin himself admits:† That "neither the enjoyment nor the capacity of producing musical notes are faculties of the least direct use to man in reference to his ordinary habits of life, they must be ranked amongst the most mysterious with which he is endowed."

Mr. Wallace also agrees with us concerning the value he attaches to man's "capacity to form ideal conceptions of space and time, of eternity and infinity—the capacity for intense artistic feelings of pleasure, in form, colour, and composition—and those abstract notions of form and number which render geometry and arithmetic possible," as also respecting the non-bestial origin of moral perception.*

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* 'Natural Selection,' pp. 332–360.

† 'Descent of Man,' vol. ii. p. 333.

Yet more, he considers man as not only placed "apart, as the head and culminating point of the grand series of organic nature, but as in some degree a new and distinct order of being." . . . "When the first rude spear was formed to assist in the chase; when fire was first used to cook his food; when the first seed was sown or shoot planted, a grand revolution was effected in nature, a revolution which in all the previous ages of the earth's history has had no parallel, for a being had arisen who was no longer necessarily subject to change with the changing universe, a being who was in some degree superior to nature, inasmuch as he knew how to control and regulate her action, and could keep himself in harmony with her, not by a change in body, but by an advance in mind."

Free-will.

It remains to say a few words respecting the results of our perception of our own moral freedom on the question of our origin.

Mr. Darwin naturally makes no attempt to account for the origin of man's free-will (perhaps the most wonderful quality he possesses); and I am confident that it is fundamentally impossible to explain this power of ours without granting what is fatal to his hypothesis of man's essential bestiality. On this subject I may, with advantage, quote some remarks by Mr. Richard Holt Hutton:—†

> "Here seems the right point to note, that neither the scientific principle of what is called the 'correlation of forces,' nor the Darwinian law of selection, seems to throw the smallest glimpse of light on the origin of human free-will, and that sense of responsibility of which free-will is the absolute condition. As for the Darwinian law, it is simply inconceivable, supposing you deny free-will to the lower types of organic beings, out of which, on his conception, the higher species are gradually elaborated by natural selection, that an accidental variation should introduce free-will. . . . . It is inconceivable that any law of *transmission* should introduce an element of freedom which was

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* 'Natural Selection,' pp. 351, 352.

† 'Essays,' vol. i. pp. 64–67.

entirely absent from the universe before. All that is supposed to vary in the qualities derived from ancestors is the proportion in which they are mingled, and, so to say, the mode of application to the universe outside. But that a necessary being should give birth to a being with any amount, however limited, of moral freedom is infinitely less conceivable than that parents of the insect or fish type should give birth to a perfect mammal. An accidental variation only means a variation of which you cannot determine the direction; but you can determine that the direction of variation will not outrage all the laws of parentage. . . . . If all the lower laws of force and life are absolutely fixed and inviolable, then they cannot revoke their own constitution when they issue out of the region of physiology into that of moral life. If it be the essence of all things to follow fixed laws, if there is nothing but unchangeable force moulding the universe by its gradually concentrating strength, then the conscience of man is a delusion, and his sense of responsibility and freedom must be explained away. . . . . The logic of science is consistent, but it does not explain freedom. We know that we are morally free; and we know that a free person cannot be the issue of helplessly unfolded laws. It is impossible for necessity to emancipate itself. Only if the observed necessity has been the 'must' of a Divine free-will, can that 'must' be withdrawn, and freedom restored wherever the materials for self-determination have been granted. The identity of all the sciences is assumed only at the expense of the falsification of some, and the total abrogation of one. The main facts of man's moral nature—all those on which the great interests of mankind centre, all which are the life of reverence and love—are swept away into meaningless unreality by the absolute identification of moral science with the natural sciences on the summit of which it stands. It is dangerous enough to scientific reality to confuse intelligence with instinct and to describe memory as 'a weak form' of perception; but it is the suicide of a science to manufacture a theory of moral obligation out of the materials of physical necessity—a theory of vision for the blind."

Indeed, man being, as the mind of each man may tell him, a being not only conscious, but conscious of his own consciousness; one not only acting on inference, but capable of analysing the *process* of inference; a creature not only capable of acting well or ill, but of understanding the ideas "virtue" and "moral obligation," with their correlatives freedom of choice and responsibility—man being all this, it is at once obvious that the principal part of his being is his mental power.

"In nature there is nothing great but man,
In man there is nothing great but mind."

Nevertheless, man's body must be fairly compared with the bodies of other species of animals more or less like him, and his corporeal affinities thus estimated.

Let us suppose ourselves, then, to be without bodies ourselves, to be purely immaterial intelligences, acquainted only with a world peopled like our own except that the species man had never lived upon it, yet that somehow the dead body of a man was presented for our examination.

We should then, I think, consider such body to be that of some large ape, and of one differing less widely from the apes most like it in form than do such apes differ from others, e.g., from marmosets. Yet we should note some striking specialities of structure. We should be especially struck with its vast brain, and we should be the more impressed by it when we noted how bulky was the body to which that brain belonged. We should be so impressed because we should have previously noted that, as a general rule, in backboned animals, the larger the bulk of the body the less the relative size of the brain. From our knowledge of the habits and faculties of various animals in relation to their brain-structure, we should be led to infer that the animal man was one possessing great power of co-ordinating movements, and that his emotional sensibility would have been considerable. But, above all, his powers of imagination would have been deemed by us to have been prodigious, with a corresponding faculty of collecting, grouping, and preserving sensible images of objects in complex and coherent aggregations to a degree much greater than in any other animal with which we were before acquainted. Did we know that all the various other kinds of existing animals had been developed one from another by evolution; did we know that the numerous species had been evolved from potential to actual existence by implanted powers in matter, aided by the influence of incident forces; then we might reasonably argue by analogy that a similar mode of origin had given rise to the exceptional being, the body of which we were examining.

If, however, it were made clear to us—immaterial intelligences—that the dead body before us had been in life endowed with an activity not merely animal but intellectual, so that man's mind was an active intelligence like our own—if, in other words, we understood that the difference between him and all other animals was not a difference of degree but of kind —if we could be made to understand that its vast power of collecting and grouping sensible images served but to supply its intellectual activity with materials whereby it might perceive not merely sensible phenomena, but also abstract qualities of objects—if we became aware that the sounds uttered by it in life were not exclusively emotional expressions, but were the external signs of general conceptions, then the aspect of the question would be entirely altered for us. If we further came to know that the being we were considering had been endowed with the marvellous gift of free-will, by which his intelligence could interrupt and dominate the vast chain of merely physical causation, we should then surely conclude that as that activity and the acting body together formed but one unity, and as that intellectual activity was not only different in kind from that displayed by any other animal but indefinitely more different from the activity of the highest brute than the activity of the highest brute is different from that of the lowest—for these reasons we should conclude that man's origin was different in kind from theirs.

Conclusion.

The lesson then concerning man, which we seem to gather from nature as revealed to us in our own consciousness and as externally observed, is that man differs fundamentally from every other creature which presents itself to our senses. That he differs absolutely, and therefore differs in origin also. Although a strict unity, one material whole with one form, or force (not made of two parts mutually acting according to the vulgar notion of soul and body), yet he is seen to be a compound unity in which two distinct orders of being unite.

He is manifestly "animal," with the reflex functions, feelings, desires, and emotions of an animal. Yet equally manifest is it that he has a special nature "looking before and after" which constitutes him "rational." Ruling, comprehending, interpreting, and completing much in nature, we also see in him that which manifestly points above nature. We see this, since we know that he can conceive mind indefinitely augmented in power and devoid of those limitations and imperfections it exhibits in him. Manifestly a contemplation of nature must be futile indeed which neglects to ponder over those ideas of power, wisdom, purpose, goodness and will, which are revealed to him in and by his own nature as he knows it to exist, and therefore as conceivably existing in a far higher form in that vast universe of being of which he is a self-conscious fragment.

CHAPTER VII.

THE BRUTE.

> "The highest psychical powers of animals resemble the lower psychical faculties of man. The brute is devoid of reason, and instinct is a peculiar function of the material organism, automatic and blind."

Necessity of some recapitulation.

In the preceding chapter the nature of man, the rational animal, could not be investigated without by implication, and indeed more or less directly, treating of the irrational creation considered in contrast with him. Here, where our purpose is to endeavour to gather what lesson we may from a consideration of the highest activities which brutes manifest, it will be necessary to reconsider some of the matters already treated of in our examination of the nature of man. Thus some recapitulation is unavoidable save at the sacrifice of clearness and cogency.

The highest activities of irrational animals are those sensitive and emotional ones which constitute the functional exercise of their nervous system, and especially characteristic of animal nature is that form of nervous activity called "Instinct."

Instinct, mode of studying it.

The question as to the true nature of "Instinct" is one which has been much discussed of late, and is considered by many persons to be peculiarly difficult. It is, in fact, attended with some peculiar difficulty, because not only are we unable to make brute psychosis a part of our own consciousness, but we are also debarred from learning it by any process similar to that which enables us to enter into the minds of our fellow-men—namely, rational speech. The instincts of animals have been, however, and are very carefully studied and observed, and it is generally assumed that to understand "Instinct" the continued and reiterated study of animal activity is the one thing necessary. It is obvious, indeed, that without such study Instinct cannot be clearly comprehended; and yet it may be questioned whether mental activity, in its endeavour to understand Instinct, has not been almost exclusively exercised in what, under existing circumstances, is the least useful mode. Every object of study is made clear to us by that which limits and contrasts with it, just as the size of any particular building is brought home to us by considering the size of surrounding objects, or its relation to the human stature. To comprehend Instinct is to appreciate justly its relations with the other faculties of animals and with our own, and it is especially its relation to Reason which is an object of interest. It is, then, plainly necessary that we should, more or less, perfectly understand "Reason," in order to thoroughly understand "Instinct." Now, unfortunately, it appears that most of those who have made it their business to study the so-called "minds" of animals have taken very little pains to understand their own mind. If this appearance is not deceptive, it follows that what most requires to be done, in order to justly appreciate "Instinct," is to patiently study, not Instinct, but Reason. Perhaps the most remarkable circumstance connected with living English writers, on questions such as those we here refer to, is the conspicuous absence in them of any manifest comprehension of those very powers they so continually exercise, and their apparent want of appreciation of that Reason to which they verbally appeal. Thus, while what Instinct is, and can do, is now fairly appreciated; what it is not, and what it cannot do, though Reason can and does, is generally lost sight of and ignored.

The mode in use generally defective.

That this defect should exist will not appear so surprising when we consider how trying and difficult, for those unaccustomed to it, is the habit of turning the mind in upon itself, and the investigation by the mind of the mind's own processes. It is not to be wondered at if many persons shirk unwonted labour of this kind. Unfortunately, the study of Reason, and therefore the study of Instinct also, cannot be pursued with any reasonable hope of profit without frequent use of this process of introspection, nor without referring to, and at least briefly considering, some of the most fundamental questions of Philosophy. This is, indeed, obvious, since to compare "Instinct" with "Reason," we must know what "Reason" is; and this can only be ascertained by an inquiry into the activity of our own mind, into its ultimate and supreme declarations, into the tests as to such supremacy, and into the grounds on which we are, if at all, to accept such supreme declarations as true. Yet, after all, however arduous may be the process, it nevertheless does come within the field of experimental science in its widest sense. It does come within that field, because the elementary truths concerning the mind and its modes of activity repose upon observation and experiment, and the hypothesis which the inductions so induced suggest can be verified by testing experimentally such deductions as may necessarily flow from such hypothesis. But the most important of these observations are observations made by each observer on his own mental processes, while many of the experiments are of a similar nature.

Reason for this.

The slightest consideration of our own mental activity soon shows us that, in addition to our various feelings, we also "think" and "will." Thus, when a kindness has been done us, besides pleasurable feelings and emotions, we can think of and recognise the kindness of the kind act—possibly, also, the self-denying goodness apparent in the performer of it—and we can will to return such kindness by some corresponding act on our own part. On the other hand, we may feel great annoyance at some hostile action; and as we think of the unpleasant consequences, one after another, which will probably result to us from it, and of the peculiar ingratitude and treachery of the

Results of introspection.

doer, we may begin to determine upon some act of hostility in return. The idea may then occur to us that revenge is wrong, and we may wish to avoid our contemplated act of hostility, but the "malice" of the action may have been such, and our temperament may be so irascible, that the temptation to revenge is almost overpowering. We may then, with the deliberate intention of aiding the weakness of our goodwill, deliberately consider all the claims on our forbearance we can think of—such, e.g., as that the father of our enemy, while alive, did us many kindnesses; that the circumstances of his mother are such that any trouble or anxiety would do her serious injury; that the son has almost ceased to be a rational man from his habitual intemperance; and we may reinforce these considerations by others drawn from religion. Finally, we may force ourselves to relinquish all hostile intention, and perhaps even to perform some beneficial action instead. Here we have feelings and emotions; but, in addition, we have "thought" reflecting on such feelings and emotions, and "will" dictating our responsive action. These phenomena of our mind are facts of observation and experience, as immediately perceptible as any concerning our body.

On turning our mind inwards upon itself, we recognise our own enduring existence as a fact supremely certain. We *know* with absolute certainty that we are the same person we were an hour ago, a week ago, perhaps many years ago. If we are asked how we recognise our own existence, we reply we recognise it by our activity, by the actual exercise of our various powers—in this instance by the act of thinking, and thinking of ourselves. If we are further asked whether we can prove our own existence to ourselves, we reply that primary truths cannot be proved. Every process of truth, as we have already seen, must ultimately rest on truths directly known without proof, otherwise the process of reasoning must run back for ever, and nothing could ever be proved. Our own existence, as a primary truth directly known to each of us, cannot be proved. Nevertheless, though we cannot *prove* our own existence, we can bring forward a truth to justify and reinforce our consciousness—namely, "Whatever thinks, exists;" and since we know that we can and do think, it necessarily follows that we exist, and so reason reinforces the declaration of consciousness. Should any one object—"How do you know that such primary *dicta* are true? May not what you think is your existence be really the existence of somebody else, or your life the dream of some other being?" We reply, that in self-consciousness, and in the perception of such primary truths as that "What thinks, exists," we reach the limit which nature has placed, and that should any man be so mad as to doubt the truth of such primary *dicta*, he must logically doubt of every other affirmation whatever, even that of his own doubt, which thus destroys itself. Absolute scepticism, and consequently utter intellectual paralysis, are the inevitable logical results of any real doubt in this matter of our own existence.

There is another point of which we should make sure in examining the activity of our own minds. To have a knowledge of anything is one thing; to know that we have that knowledge is another, and a very different thing. We cognize an object—e.g., a crow flying—by one act; we cognize that cognition by a very different act. To judge that one mountain is higher than another is one mental act; to recognise that mental act as a judgment is an act of a very different kind. Yet both these are judgments. To feel—to have a sensation, then, is indeed a different thing from recognising such sensation as ours, or as being one of a particular class of sensations.

Our knowledge of ourselves as being the same person now as in the past, implies the trustworthiness of memory—one of the most wonderful of our many wonderful faculties. Now by a little further introspection we may easily see that memory is of two kinds—(1) Involuntary, passive, unconscious, sensitive memory—to our present possession of which we do not advert; and (2) Voluntary, active, conscious, intellectual memory, which we re-

Organic and intellectual memory.

cognise ourselves as actually possessing, or as having possessed in the past, or as likely to possess in the future. Either of these may exist without the other. That the passive memory may so exist is obvious, but that the second may be alone present is proved by that most remarkable fact that we may search our minds for something which we know we have fully remembered, and which we think we shall probably fully remember again; which at present we cannot imagine, but which we intellectually remember, and immediately recognise as the object of our intellectual pursuit as soon as its image presents itself in our imagination.

List of the mind's higher powers.

Bearing in mind the lessons as to self-consciousness, reason, memory, will, and language, gathered from introspection and observation in the earlier chapters, it seems undeniable that we severally possess the following powers:—

1. A power of directly perceiving and reflecting upon our continued personal activity and existence—sensations and perceptions being reflected on by thought and recognised as our own, and we ourselves being recognised as affected and perceiving—*self-consciousness.*
2. A power of actively recalling passed thoughts or experiences—*intellectual memory.*
3. A power of reflecting upon our sensations and perceptions, and asking what they are and why they are; of apprehending abstract ideas; of perceiving truth directly or by ratiocination and also goodness—*reason.*
4. A power of, on certain occasions, deliberately electing to act either with, or in opposition to, the apparent resultant of involuntary attractions and repulsions—*will.*
5. A power of giving expression by signs to general conceptions and abstract ideas; a power of enunciating deliberate judgments by articulate sounds—*language.*

These powers result in actions which are deliberate operations implying the use of a self-conscious, reflective, representative faculty.

Are such powers, however, possessed by all mankind? Putting aside idiots as beings whose latent faculties are inaccessible, and who are manifestly in an abnormal pathological condition, we have no hesitation, after considering what has been brought forward in preceding chapters, in affirming that they have. The mental nature of all men is essentially one; and if there are those who do not understand all that is above implied, they can at least be *made to understand it.* The essential oneness of human nature is, as we have seen in the last chapter, sufficiently attested by witnesses the least likely to be biassed in favour of such unity, and the most fitted by their abilities, and the patient labour they have bestowed upon the subject, to express an authoritative judgment. "Reason" I take to be a reflective power which asks the questions "What?" and "Why?" But Mr. Tylor tells us, in a passage before cited:—

Which are common to all mankind.

> "Man's craving to know the *causes* at work in each event he witnesses, the reasons *why* each state of things he surveys is such as it is and no other, is no product of high civilisation, but a characteristic of his race down to *its lowest stage.* Among rude savages it is already an intellectual appetite, whose satisfaction claims many of the moments not engrossed by war, or sport, or sleep."—*Primitive Culture,* vol. i. p. 332.

He also remarks:—

> "The state of things amongst the lower tribes which presents itself to the student, is a *substantial similarity* in knowledge, arts, and customs, running through the whole world."—*Researches into the Early History of Mankind,* p. 231.

Indeed, this author not only witnesses to the essential unity of man in all places but also in all times. He says:—

> "The historian and the ethnographer must be called upon to show the hereditary standing of each opinion and practice, and their inquiry must go back as far as antiquity or savagery can show a vestige, for there seems no human thought so primitive as to have lost its bearing on our own thought, nor so ancient as to have broken its connection with our life."—*Primitive Culture,* vol. i. p. 409.

All men, then, agree in possessing the faculties above enumerated—namely, self-consciousness, reason, and will, with rational speech. It will not, probably, be contended by any naturalist that Instinct ever rises to such a height as this, but many assert that it contains such faculties, potentially and in germ, and that there is, as Mr. Darwin says, no difference of kind, but only one of degree, between it and reason.

Danger of a special fallacy.

Since we are unable to converse with brutes,* we can but divine and infer from their gestures, motions, and the sounds they emit, what may be the nature of their highest physical powers. Now, in this process of inference, we necessarily risk being guilty of a fallacy similar to that of which a certain school of Theology has shown us a conspicuous instance.

The whole process of reasoning being a progression to the unknown by means of the known, we can of course only define the former in terms of the latter. All our knowledge having human sensible experience as its necessary condition, scientific language *can* only make use of terms which primarily denote such human experiences. Thus, when men speak of God and of his attributes, they are, of course, necessarily limited to terms primarily denoting human sensible experiences, and hence arises the danger of *theological anthropomorphism.* In the temporary philosophical decline which has accompanied the rise of physical science, very many modern theologians, neglecting the old rational conception of a *Deus analogus,* have been asserting a *Deus univocus* with the natural result of producing the modern opposite error of asserting a *Deus æquivocus.* In other words, the absurdity of asserting that the terms which denote powers and qualities in man have the very same meaning when also applied to God, has naturally led to the opposite absurdity of denying that there is any relation whatever between certain terms as applied to God, and the same terms as applied to man. It has become necessary to return to the old, safe *via media* of an older school, and maintain with them that though no term can be used in precisely the same sense of man and of God, yet that none the less there *is* a certain relation of *analogy* between these two uses of the same term.

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* Professor Huxley ('Contemporary Review' for November 1871, p. 464) has asked the singular question: "What is the value of the evidence which leads one to believe that one's fellow-man feels? The only evidence in this argument of analogy, is the *similarity of his structure and of his actions* to one's own." Surely it is not by similarity of structure or actions, but by *language*, that men are placed in communication with one another, and that the rational intellect of each perceives the rationality and sensibility of his fellow-man.

An exactly parallel but opposite error has taken place in biological science. Descartes, that fruitful author of philosophic error, deserted the old moderate view which affirmed that between the highest psychical powers of man and brutes there is a certain natural likeness and analogy, and gave rise to* the notion that animals are nothing but wonderfully complex machines—an error naturally resulting in the opposite one now so prevalent—the error, namely, that there is a substantial identity between the brute soul and the soul of man—*Biological Anthropomorphism.*

Statements and misrepresentations of the kind follow naturally from that tendency which exists on the part of so many to be interested in and attracted by anecdotes in praise of the mental powers of brutes. We see this tendency in the many fables about animals—fables of all ages and of all climes—such as now serve to amuse our childhood or to call out the skill of artists such as Kaulbach.

It is this biological, or inverted, anthropomorphism, which has led to that exaggerated interpretation of animal activities, of which Mr. Darwin, in his 'Descent of Man,' has given us, as we shall shortly see, such an ever-memorable example. As an example of the hasty attribution of human qualities to brutes, on account of certain superficial resemblances, we may take a sitting bird. It is, no doubt, true that the parent birds *have* keen parental emotions, yet a particular conspicuous act has had very undue weight assigned to it as a proof of such tenderness. What praises of the patient fidelity of the bird sitting on her unhatched progeny do we not meet with, and yet this constancy is said to be promoted by something very different from maternal tenderness! In truth, a multitude of branching arteries and veins furnish such an abundance of blood to the bird's breast as to cause it to seek in the contact of the eggs a refreshing sensation. Cabanis and Duges tell us* that if a capon be plucked in that region which is naturally bare in a sitting hen, and if an irritating substance be applied to the part so stripped, then not only will the local inflammation cause the capon to seek the contact of eggs and to sit, but even to act maternally to the young when they come to be hatched.

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* We say "gave rise to," because Descartes did not really himself maintain that animals were pure machines. He allowed *feeling* to the animal, and said: "Je ne lui repose pas même le *sentiment*, en tant qu'il depend des organes du corps; ainsi mon opinion n'est pas si cruelle aux animaux."

Instinct cannot perform rational acts.

But the distinction in kind between Instinct and Reason is shown both by the fact that the former is not able to do things specially characteristic of the latter, and by the fact that it can do other things for which reason, under such circumstances, would be impotent. Thus, no animals employ rational language, nor do they deliberately act in mutual concert, nor make use of antecedent experiences to intentionally improve upon the past. Apes are said, like dogs and cats, to warm themselves with pleasure at deserted fires, yet, though they see wood burning, they are unable to add fresh fuel for their comfort. Swallows will continue to build on a house which they can see has begun to be demolished. Flies will deposit their eggs on a carrion plant instead of on animal matter. The hymenopterous insects show us, perhaps, the most wonderful and complex of all insects, and yet Sir John Lubbock has† demonstrated, by careful and interesting experiments, that there is such an habitual absence of any intercommunication between them as to facts, as to fairly lead to the inference that their communications concern their feelings only.

But Instinct can do things impossible to Reason. Thus, chickens newly hatched will so correctly adjust their movements as at once to pick up various objects. Some young puppies, M. Gratiolet tells us, that had never seen a wolf, have been thrown into convulsions by the smell of a small portion of wolf-skin. Birds of the first year migrate readily to avoid a cold, of which they can have no knowledge. The young female wasp (*Sphex*), without maternal experience, will seize caterpillars or spiders, and, stinging them in a certain definite spot, paralyse and deprive them of all power of motion (and probably also of sensation), without depriving them of life. She places them thus paralysed in her nest with her eggs, so that the grubs, when hatched, may be able to subsist on a living prey, unable to escape from or resist their defenceless and all but powerless destroyers. Now, it is absolutely impossible that the consequences of its actions can have been intellectually apprehended by the parent wasp. Had she Reason without her natural Instinct, she could only learn to perform such actions through experience and the teaching (by precept or example) of older wasps. Now, if such complex actions can be performed in this unconscious manner by insects, why may not the most seemingly rational actions of higher animals be performed in a similar manner? Some such actions, indeed, singularly resemble those of *Sphex*. Thus, even as to mammals, one writer tells us:—

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* 'Rapports du Physique et du Moral,' Ed. i. p. 127.

† See two truly admirable Papers read before the Linnean Society on the 19th of March and 17th of December, 1874.

But can do what Reason cannot do.

> "I dug out five young pole-cats, comfortably imbedded in dry, withered grass; and in a side hole, of proper dimensions for such a larder, I poked out forty large frogs and two toads, all alive, but merely capable of sprawling a little. On examination I found that the whole number, toads and all, had been purposely and dexterously bitten through the brain."—(See *Magazine of Natural History*, vol. vi. p. 206.)

Again, let us consider the carpenter bee, which lays its eggs in wooden excavations, placed one above another and separated by thin partitions, the lower cell having a communication with the exterior. The egg of this lowest cell is hatched first, and the young readily escapes through the way of exit provided for it. The next grub has to eat its way through the partition beneath to reach the outlet, and so with those successively placed higher up. How could the mother learn by Reason to construct such a nest, or the young so learn to escape from it?

Thus, then, both by what it can do, and by what it cannot, Instinct exhibits its fundamental distinctness from Reason. But, indeed, there is no difficulty in quoting from our best-known evolutionists the most striking declarations as to the wide difference between the highest psychical faculties of men and brutes. Thus, even Mr. Darwin is constrained to admit,* that there is "no doubt," but that the difference is "enormous." Mr. Herbert Spencer also makes some noteworthy admissions. He remarks, e.g., as to

Mr. Herbert Spencer's admissions.

> "birds that fly from inland to the seaside to feed when the tide is out, and cattle that return to the farmyard at milking-time. . . . . Even here there is not a purely intelligent adjustment of inner to outer sequences, for creatures accustomed to eat or to be milked at regular intervals come to have recurrences of constitutional states, and the sensations accompanying these states form the proximate stimuli to their acts."—*Psychology*, vol. i. pp. 323, 324.

And, again, he says:—

> "It is anatomically demonstrable that the pairing and nidification of birds in the spring is preceded by constitutional changes which are probably produced by more food and higher temperature. And it is a rational inference that *the whole series of processes* in the rearing of a brood are severally gone through, not with any recognition of remote ends, but solely made under the stimulus of conditions continuously present."

Also he admits that we find this

> "higher order of correspondence in time, scarcely more than foreshadowed among the *higher animals*, and definitely exhibited only when we arrive at the human race."

And, again:—

> "Only when we come to the human race are correspondences of this degree of speciality exhibited with distinctness and frequency."—*Op. cit.* p. 338.

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* 'Descent of Man,' vol. ii. p. 34.

He also makes a very important admission when he says:—

> "It might fairly be said that the Indian fish, which catches insects flying over the surface by hitting them with jets of water, exhibits an adjustment of inner relations to outer relations as special as that shown by the archer (who shoots high according to the distance of the object aimed at); but considering that in the fish nothing more is implied than an automatic connection between certain visual impressions and certain muscular contractions, it cannot be held that there is anything like the complexity of correspondence."—*Op. cit.* p. 353.

Surely the very same principle may be applied to explain the actions of the parrot, the pointer, the sapajou cracking his nut with a stone, or the chimpanzee drinking out of his teacup. There is nothing in any of these actions indicating a power different in kind from that evidently possessed by the fish, so aiming his watery jet as to hit in the air an object seen from beneath the water in spite of the effects of refraction. Finally, may be cited the following passage:—

> "The animal's nervous system is played upon by external objects, the clustered properties of which draw out answering chords of feelings, followed by faintly-reverberating chords of further feelings; but it is *otherwise passive*—it cannot evolve a consciousness that is *independent of the immediate environment.*"—*Op. cit.* pp. 564, 565.

Here we have the necessary results of an absence of self-consciousness. Beings devoid of self-consciousness

> "differentiate nothing consciously; they move, but they know not where, or why, or when; they see, but they know not colour as distinguished from sound, which they bear equally unconsciously. They know not their eye as such; they have senses and perceive, but they know not anything as such. Memory they may have, but they distinguish not the remembrance from the perception."—*The Psychology of Scepticism and Phenomenalism.* By James Andrews. Glasgow: J. Maclefuse, 1874.

Mr. Darwin's anecdotes.

It may be well here to consider the anecdotes narrated by Mr. Darwin in support of the rationality of brutes. Before doing so, however, we must remark that his statements given on the authority (sometimes second-hand authority) of others afford little evidence of careful criticism. This is the more noteworthy when we consider the care and pains which he bestows on all the phenomena which he himself examines.

Thus, for example, we are told on the authority of Brehm that

> "An eagle seized a young cercopithecus, which, by clinging to a branch, was not at once carried off; it cried loudly for assistance, upon which other members of the troop, with much uproar, rushed to the rescue, surrounded the eagle, and pulled out so many feathers that he no longer thought of his prey, but only how to escape."—vol. i. p. 76.

I confess I wish that Mr. Darwin had witnessed this episode. Perhaps, however, he has seen other facts sufficiently similar to render this one credible. In the absence of really good evidence, I should, however, be inclined to doubt the fact of a young cercopithecus, unexpectedly seized, being able, by clinging, to resist the action of an eagle's wings.

Again he tells us (vol. i. p. 41) that "one female baboon had so capacious a heart that she not only adopted young monkeys of other species, but stole young dogs and cats, which she continually carried about. Her kindness, however, did not go so far as to share her food with her adopted offspring, at which Brehm was surprised, as *his monkeys always divided everything quite fairly* with their own young ones. An adopted kitten scratched the above-mentioned affectionate baboon, *who certainly had a fine intellect*, for she was much astonished at being scratched, and immediately examined the kitten's feet, and without more ado bit off the claws!"

Another sensational statement is given on the same authority:* "A great troop of baboons were crossing a valley; some had already ascended the opposite mountain, and some were still in the valley; the latter were attacked by dogs, but the old males immediately hurried down from the rocks, and with mouths widely opened roared so fearfully that the dogs precipitately retreated. They were again encouraged to the attack; but by this time all the baboons had re-ascended the heights, excepting a young one, about six months old, who, loudly calling for aid, climbed on a block of rock and was surrounded. Now one of the largest males, a true hero, came down again from the mountain, slowly went to the young one, coaxed him, and triumphantly led him away—*the dogs being too much astonished to make an attack.*"* The last words are truly puerile; the whole we have no hesitation in characterizing as an audacious romance, though possibly "founded on fact." The statement that "the dogs," which had not hesitated to attack "the great troop of baboons," were too much overcome to assault one, even while "slowly" returning, or when again retreating and "leading away" with him the infant of six months, will form a good "pendant" to the weak-winged eagle of the preceding tale.

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* *Op. cit.* p 75.

Again we read† of a "troop of the *Cercopithecus griseoviridis*" having rushed through a thorny brake, after which "each monkey stretches itself on a branch, and another monkey sitting by 'conscientiously' examines its fur and extracts every thorn or burr." In those who know monkeys, even at the Zoological Gardens, the process of extraction will create no surprise, but the epithet "conscientiously" and the word "every" reveal the animus of this too willing witness.

Again we have a romance on only second-hand authority (namely a quotation by Brehm of Schimper) to the following effect:—

> "In Abyssinia, when the baboons belonging to one species (*C. gelada*) descend in troops from the mountains to plunder the fields, they sometimes encounter troops of another species (*C. hamadryas*), and then a fight ensues. The Geladas roll down great stones, which the Hamadryas try to avoid, and then both species, making a great uproar, rush furiously against each other. Brehm, when accompanying the Duke

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* Italics ours.

† *Op. cit.* p. 75.

of Coburg-Gotha, aided in an attack with fire-arms on a troop of baboons in the pass of Meusa in Abyssinia. The baboons in return rolled so many stones down the mountain, some as large as a man's head, that the attackers had to beat a retreat; and the pass was actually for a time closed against the caravan. It deserves notice that these baboons thus acted in concert."—Vol. i. p. 51.

Now, if every statement of fact here given be absolutely correct, it in no way even tends to invalidate the distinction we have drawn between "instinct" and "reason;" but the positive assertion that the brutes "acted in concert," when the evidence proves nothing more than that their actions were simultaneous, shows a strong bias on the part of the narrator. A flock of sheep will simultaneously turn round and stare and stamp at an intruder; but this is not "concerted action," which means that actions are not only simultaneous, but are so in consequence of a reciprocal understanding and convention between the various agents. It may be added that if any brutes were capable of such really *concerted* action, the effects would soon make themselves known to us so forcibly as to prevent the possibility of mistake.

Mr. Darwin even permits himself to indulge in such remarks as the following. He says:* "But can we feel sure that an old dog with an excellent memory and some power of imagination, as shown by his dreams, never reflects on his past pleasures in the chase? and this would be a form of self-consciousness. On the other hand, Buchner has remarked, how little can the hard-worked wife of a degraded Australian savage, who uses hardly any abstract words [!] and cannot count above four, exert her self-consciousness, or reflect on the nature of her own existence."

The consequences of accepting facts which have no evidence in their favour and many against them, merely because we *cannot feel sure* that they are not true, would be alarming indeed. Here, however, for the reasons before given in this chapter, we may feel *quite sure.* Mr. Darwin's speculation as to the dog is utterly gratuitous, since we need never introduce an unlikely cause for any phenomenon when one known to exist, the dog's sentient nature, is sufficient to explain the phenomenon in question. As to the Australian, experience shows us how very slight powers of arithmetic may coexist with very distinct reflections on the problems of human existence.

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* 'Descent of Man,' vol. ii. p. 109.

Again, Mr. Darwin says:* "Who can say what cows feel, when they surround and stare intently on a dying or dead companion? That animals sometimes are far from feeling any sympathy is too certain; for they will expel a wounded animal from the herd, or gore or worry it to death." It is such passages as these which make the task of criticism so painful; yet the gravity of the issue leaves no alternative, though I am anxious to keep the expression of disapproval within the narrowest possible limits consonant with justice.

To exaggerate the emotions of brutes and give them an intellectual appearance is, however, a necessity of Mr. Darwin's position, since (as we saw in our fifth chapter) he makes first gregariousness and then social sympathy the origin of our power of moral perception.

And here a caution may well be given against the ambiguity which may lie hid in the terms "gregarious" and "social."

It must never be lost sight of that in a "gregarious habit" there is no moral element. First, because the mental powers of brutes are not equal to form reflective, deliberate judgments; and, secondly, because all the facts, however mutually beneficial may be their action, may be explained without the intervention, on their part, of reason. The word "social" is ambiguous, since gregarious animals may, metaphorically, be called social, and man's social relations may be regarded both as to the material benefits they occasion and also morally. Having then first used the term "social" in one sense, it may easily be afterwards employed in the other meaning, and thus the conception of "moral action" may be silently and illegitimately introduced when describing the habits of animals.

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* *Op. cit.* p. 76.

Speaking of the actions of gregarious animals, Mr. Darwin remarks that their feelings and services are by no means extended to all the individuals of the same species, only to those of the same association. But Mr. Galton has shown* by evidence that direct services are *not* extended even to members of the same troop or herd.

We come now to Mr. Darwin's instances of brute rationality. In the first place he tells us:—

As to brute rationality.

> "I had a dog who was savage and averse to all strangers, and I purposely tried his memory after an absence of five years and two days. I went near the stable where he lived, and shouted to him in my old manner; he showed no joy, but instantly followed me out walking and obeyed me, exactly as if I had parted with him only half an hour before. A train of old associations, dormant during five years, had thus been instantaneously awakened in his mind."—vol. i. p. 45.

No doubt! but this is not "reason." Indeed, we could hardly have a better instance of the mere action of associated sensible impressions. What have we here which implies more than memory, impressions of sensible objects and their association? Had there been reason there would have been signs of joy and wonder, though such signs would not alone prove reason to exist. It is evident that Mr. Darwin's own explanation is the sufficient one—namely, a train of associated sensible impressions. Mr. Darwin surely cannot think that there is in this case any evidence of the dog's having put to himself those questions which, under the circumstances, a rational being would put. Mr. Darwin also tells us how a monkey-trainer gave up in despair monkeys the attention of which was easily distracted from his teaching, while "a monkey which carefully attended to him could always be trained." But "attention" does not imply

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* See 'Macmillan's Magazine' for March 1871.

"reason." The anecdote only shows that some monkeys are more easily impressed and more retentive of impressions than others.

Again, we are told, as an instance of *reason*, that "Rengger sometimes put a live wasp in paper so that the monkeys in hastily unfolding it got stung; after this had once happened, they always first held the packet to their ears to detect any movement within." But here again we have no need to call in the aid of "reason." The monkeys had had the group of sensations "folded paper" associated with the other groups—"noise and movement" and "stung fingers." The second time they experience the group of sensations "folded paper" the succeeding sensations (in this instance only too keenly associated) are forcibly recalled, and with the recollection of the auditory sensation the hand goes to the ear. Yet Mr. Darwin considers this unimportant instance of such significance that he goes on to say:—

> "Any one who is not convinced by such facts as these, and by what he may observe with his own dogs, that animals can reason, would not be convinced by anything I could add. Nevertheless, I will give one case with respect to dogs, as it rests on two distinct observers, and can *hardly depend on the modification of any instinct.* [The italics are mine.] Mr. Colquhoun winged two wild ducks, which fell on the opposite side of a stream; his retriever tried to bring over both at once, but could not succeed; she then, though never before known to ruffle a feather, deliberately killed one, brought over the other, and returned for the dead bird. Colonel Hutchinson relates that two partridges were shot at once, one being killed and the other wounded; the latter ran away, and was caught by the retriever, who on her return came across the dead bird; she stopped, evidently greatly puzzled, and after one or two trials, finding she could not take it up without permitting the escape of the winged bird, she considered a moment, then deliberately murdered it by giving it a severe crunch, and afterwards brought away both together. This was the only known instance of her having wilfully injured any game."

Mr. Darwin adds:—

> "Here we have reason, though not quite perfect, for the retriever might have brought the wounded bird first and then returned for the dead one, as in the case of the two wild ducks."—Vol. i. pp. 47, 48.

Here I reply we have nothing of the kind, and to bring "reason" into play is gratuitous. The circumstances can be perfectly explained (and on Mr. Darwin's own principles) as evidences of the revival of an old instinct. The ancestors of sporting dogs of course killed their prey, and that trained dogs do not do so is simply due to man's action, which has suppressed the instinct by education and which so continually keeps it under control. It is indubitable that the old tendency *must* be latent, and that a small interruption in the normal retrieving process, such as occurred in the cases cited, would probably be sufficient to revive it and call the obsolete habit into exercise.

But perhaps the most surprising instance of groundless inference is presented in the following passage:—

> "My dog, a full-grown and very sensible animal, was lying on the lawn during a hot and stillday; but at a little distance a slight breeze occasionally moved an open parasol, which would have been wholly disregarded by the dog, had any one stood near it. As it was, every time that the parasol slightly moved, the dog growled fiercely and barked. He must, I think, have reasoned to himself in a rapid and unconscious manner, that movement without any apparent cause indicated the presence of some strange living agent, and no stranger had a right to be on his territory."—vol. i. p. 67.

The consequences deduced from this trivial incident are amazing. Probably, however, Mr. Darwin does not mean what he says; but, on the face of it, we have a brute credited with the abstract ideas "movement," "causation," and the notions logically arranged and classified in subordinate genera—"agent," "living agent," "strange living agent." He also attributes to it the notion of "a right" of "territorial limitation," and the relation of such "limited territory" and "personal ownership." It may safely be affirmed that if a dog could so reason in one instance he would in others, and would give much more unequivocal proofs for Mr. Darwin's use.

Mr. Darwin, however, speaks of reasoning in an "unconscious manner," so that he cannot really mean any process of reasoning at all; but, if so, his case is in no way apposite. Even an insect can be startled, and will exhibit as much evidence of rationality as is afforded by the growl of a dog; and all that is really necessary to explain such a phenomenon exists in an oyster, or even in the much-talked-of Ascidian.

Thus, then, it appears that, even in Mr. Darwin's specially-selected instances, there is not a tittle of evidence tending, however slightly, to show that any brute possesses the representative reflective faculties. But if, as we assert, brute animals are destitute of such higher faculties, it may well be that those lower faculties which they have (and which we more or less share with them) are highly developed, and their senses possess a degree of keenness and quickness inconceivable to us. Their minds* being entirely occupied with such lower faculties, and having, so to speak, nothing else to attend to, their sensible impressions become interwoven and connected to a greater extent than in us. Indeed, in the absence of free-will, the laws of the association of ideas obtain supreme command over the minds of brutes: the brute being entirely immersed, as it were, in his presentative faculties.

There yet remains a matter for consideration, which tends to prove the fundamental difference which exists between the mental powers of man and brutes: I mean the mental equality between animals of very different grades of structure, and their non-progressiveness. Considering the vast antiquity of the great animal groups,† it is, indeed, remarkable how little advance in mental capacity has been made even by the highest brutes. This is made especially evident by Mr. Darwin's own assertions as to the capacities of lowly animals. Thus he tells us that—

> "Mr. Gardner, whilst watching a shore-crab (Gelasimus) making its burrow, threw some shells towards the hole. One rolled in, and three

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* The words "mind," "mental," "intelligence," &c., are here made use of in reference to the highest psychical faculties of brutes, in conformity to popular usage, and not as strictly appropriate.

† Mr. Darwin (vol. i. p. 360) refers to Dr. Scudder's discovery of "a fossil insect in the Devonian formation of New Brunswick, furnished with the well-known tympanum or stridulating apparatus of the male Locustidæ."

other shells remained within a few inches of the mouth. In about five minutes the crab brought out the shell which had fallen in, and carried it away to the distance of a foot; it then saw the three other shells lying near, and *evidently thinking* (the italics are mine) that they might likewise roll in, carried them to the spot where it had laid the first."—vol. i. p. 334.

Mr. Darwin adds or quotes the astonishing remark, "It would, I think, be difficult to distinguish this act from one performed by man by the aid of reason." Again, he tells us:—

"Mr. Lonsdale informs me that he placed a pair of land-snails (*Helix pomatia*), one of which was weakly, into a small and ill-provided garden. After a short time the strong and healthy individual disappeared, and was traced by its track of slime over a wall into an adjoining well-stocked garden. Mr. Lonsdale concluded that it had deserted its sickly mate; but after an absence of twenty-four hours it returned, and apparently communicated the result of its successful exploration, for both then started along the same track and disappeared over the wall."—vol. i. p. 325.

Parity of psychical nature between very different animals.

Whatever may be the real value of the statements quoted, they harmonize with a matter which is incontestable. I refer to the fact that the intelligence of brutes, be they high or be they low, is essentially one in kind, there being a singular parity between animals belonging to groups widely different in type of structure and in degree of development. It is difficult to see in what respect the "intelligence" of these land-snails fell short of that of a gorilla.

Apart from the small modifications which experience occasionally introduces into the habits of animals—as sometimes occurs after man has begun to frequent a newly-discovered island—it cannot be denied that, looking broadly over the whole animal kingdom, there is no evidence of advance in mental power on the part of brutes. This absence of progression in animal intelligence is a very important consideration, and it is one which does not seem to be adverted to by Mr. Darwin, though the facts detailed by him are exceedingly suggestive of it.

When I speak of this absence of progression, I do not, of course, mean to deny that the dog is superior in mental activity to the fish, or the jackdaw to the toad. What is meant is that, considering the vast period of time that must have elapsed (on Mr. Darwin's theory) for the evolution of an Orang from an Ascidian, and considering how beneficial increased intelligence must be to all in the struggle for life, it is inconceivable, on Mr. Darwin's principles only, that a mental advance should not have taken place greater in degree, more generally diffused, and more in proportion to the grade of the various animals than we find to be actually the case. For in what respect is the intelligence of the ape superior to that of the dog or of the elephant? An absurd over-estimate of the psychical qualities of apes is common enough. But with respect to them the mistake is natural, seeing that their resemblance to us in bodily form gives a deceptive appearance to actions and tricks which, but for this resemblance, would excite no very special notice. Yet in fact, as to apes, it cannot be said that there is one point in which their psychical nature approximates to man more than that of those of four-footed beasts. But, again, where is the great superiority of a dog or an ape over a bird? The falcon trained to hawking is at least as remarkable an instance of the power of education as the trained dog. The tricks which birds can be taught to perform are as complex and wonderful as those acted by the mammal. The phenomena of nidification, and some of those now brought forward by Mr. Darwin as to courtship, are fully comparable with analogous phenomena of quasi-intelligence in any beast.

This, however, is but a small part of the argument. For let us descend to the Invertebrata, and what do we find?—a restriction of their quasi-mental faculties proportioned to their constantly inferior type of structure? By no means. We find, e.g., in ants, phenomena which simulate those of an intelligence such as ours far more than do any phenomena exhibited by the highest beasts. Ants display a complete and complex political organization, classes of beings socially distinct, war resulting in the capture of slaves, and the appropriation and maintenance of domestic animals (*Aphides*) analogous to our milk-giving cattle.

Mr. Darwin truthfully remarks on the great difference in these respects between such creatures as ants and bees, and singularly inert members of the same class, such as the scale insect or coccus. But can it be pretended that natural and sexual selection have alone produced these phenomena in certain insects, and failed to produce them in any other mere animals even of the very highest class? If these phenomena are due to a power and faculty similar in kind to human intelligence, and which power is latent and capable of evolution in all animals, then it is certain that this power must have been evolved in other instances also, and that we should see varying degrees of it in many, and notably in the highest brutes as well as in man. If, on the other hand, the faculties of brutes are different in kind from human intelligence, there can be no reason whatever why animals most closely approaching man in physical structure should resemble him in psychical nature also.

Professor Huxley on animal rationality.

To criticisms of this nature addressed to Mr. Darwin, Professor Huxley, as already said, has replied in the 'Contemporary Review.' Adverting to the question of "reason," Professor Huxley there asserts * that "ratiocination is resolvable into predication, and predication consists in marking, in some way, the succession, the likeness and unlikeness, of things or their ideas. Whatever does this, reasons; and if a machine produces these effects of reason, I see no more ground for denying to it the reasoning power because it is unconscious, than I see for refusing to Mr. Babbage's engine the title of a calculating machine on the same grounds."

"Thus it seems to me that a gamekeeper reasons, whether he is conscious or unconscious, whether his reasoning is carried on by neurosis alone, or whether it involves more or less psychosis."

I, on the other hand, consider that predication essentially consists not in marking "succession, likeness, and unlikeness," but in *recognising* these relations *as true.*

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* 'Contemporary Review' for November 1871, p. 463.

To this extent I may shelter myself under the authority of Mr. John Stuart Mill. Mr. Mill, in criticising Sir William Hamilton's definition of judgment, makes the following remarks ('Examination of Sir William Hamilton's Philosophy,' p. 346):—

> "The first objection which, I think, must occur to any one, on the contemplation of this definition, is that it omits *the main and characteristic element* of a judgment and of a proposition. . . . When we judge or assert, there is introduced a new element, that of objective reality, and a *new mental fact,* belief. Our judgments, and the assertions which express them, do not enunciate our mere mode of mentally conceiving things, but our conviction or persuasion that the facts as conceived actually exist; and a theory of judgments and propositions which does not take account of this, *cannot be a true theory.* In the words of Reid, 'I give the name of judgment to every determination of the mind concerning *what is true* or *what is false.* This, I think, is what logicians, from the days of Aristotle, have called judgment.' And this is the very element which Sir Wm. Hamilton's definition" [and I may now add Professor Huxley's also] "omits from it."

Farther on Mr. Mill says:—

> "Belief is an *essential element* in a judgment. . . . The recognition of it as true is not only an essential part, but *the* essential element of it as a judgment; leave that out, and there remains *a mere play of thought,* in which no judgment is passed. It is impossible to separate the idea of judgment from the idea of the truth of a judgment; for every judgment consists in judging something to be true. The element belief, instead of being an accident which can be passed in silence, and admitted only by implication, constitutes the very difference between a judgment and any other intellectual fact, and it is contrary to all the laws of definition to define judgment by anything else. The very meaning of a judgment or a proposition is something which is capable of being believed or disbelieved; which can be true or false; to which it is possible to say yes or no."

In addition to this, Mr. Mill, in his notes on his father's Mr. James Mill's, 'Analysis of the Human Mind,' ably shows, against Mr. Herbert Spencer, that rational belief cannot be explained as being identical with indissoluble association (vol. i. p. 402).

In denying, then, reason to brutes—in denying that their acts are rational, I do not, of course, deny for a moment that they are rational in the sense in which Mr. Babbage's machine is calculating; but what I *do* maintain is, that brutes have not the power of forming judgments in the sense above explained. And I still more emphatically deny that brutes have any, even the very dimmest, consciousness of such ideas as "ought" and "moral excellence." And because I further believe that no amount of sensible experiences can generate these conceptions, I deny that any brute is *even potentially* a moral agent. Those who credit brutes with "morality," do so by first eliminating from that idea all its essential characteristics.

One word now of explanation. Professor Huxley seems much disturbed at my speaking of virtue as, in his view, *a kind of retrieving,* and accuses me of imposing an "injurious nickname," and making a "joke." Nothing could have been further from my intention than either the one or the other. As it happens the expression was not *my own,* but was picked up in conversation with as thorough a Darwinian even as Professor Huxley himself, who used it, as I understood, not as a nickname, but as a handy mode of bringing home his conceptions to my mind. I made use of it in all innocence, and I still think it singularly apt and appropriate, not certainly to express the conception "virtue," but to bring home the utilitarian notion of it. Professor Huxley says, "What if it is? Does that make it less virtue?" I answer, unhesitatingly, that it not only makes it "less virtue," but prevents it being virtue at all, unless it springs as a habit acquired from self-conscious acts directed towards an end recognised as *good.*

It is perhaps no less decided a sensationalist than Mr. Lewes who has of late made the most unequivocal declaration as to the great difference—a difference even *in kind* between the highest psychical faculties of brutes, and our own mental powers. He tells us:—

Mr. Lewes's admissions.

"The animal feels the cosmos, and adapts himself to it. Man feels the cosmos, but he also thinks it."—*Problems of Life and Mind*, vol. i. pp. 123, 124.

Again he says:—

> "Circles differ from circles in degree; they differ from ellipses in kind. Whether large or small the circle has the same properties, and these are different from the properties of the ellipse. It is true that by insensible gradations the circle may flatten into an ellipse, or the two foci of the ellipse may blend into one, and form a circle. But so long as there are two foci, the ellipse has its characteristic properties. In like manner the boundaries of the animal and human may be found insensibly blending at certain points; but whenever the 'animal circle' has become transformed into the 'human ellipse,' by the introduction of a second centre, the difference ceases to be one of degree, and becomes one of kind, the germ of infinite variations."—*Op. cit.* pp. 153, 154.

This remarkable passage contains even a stronger argument in favour of the distinctness in kind between the faculties of men and brutes, even than Mr. Lewes himself intends. It does so because Mr. Lewes is wrong in saying that "by insensible grades the circle may flatten into an ellipse." With the least degree of flattening, the figure ceases absolutely to be a circle, although our senses may fail to detect the aberration. Mr. Lewes also admits* that brutes have "no conceptions, no general ideas, no symbols of logical operations," and affirms that the absurdity of thinking brutes could be rational

> "is so glaring, that we need not wonder at profoundly meditative minds having been led to reject with scorn the hypothesis which seeks for an explanation of human intelligence in the functions of the bodily organism common to man and animals, and having had recourse to the hypothesis of a spiritual agent superadded to the organism."—*Op. cit.* p. 157.

He also says† that "animal imagination is reproductive, but not plastic: it never constructs;" and describes‡ the "knowledge" of the brute as "such registrations of experience as suffice to guide his actions in the satisfaction of immediate impulses." In addition to all this, he makes* the highly important and suggestive addition that "between animal and human intelligence there is a gap, which can only be bridged over by *an addition from without*."

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* *Op. cit.* pp. 154, 155.

† *Op. cit.* p. 169.

‡ *Op. cit.* p. 250.

He also† remarks: "The animal thinks, but only in sensations and images, not in abstractions and symbols. The animal perceives no 'object,' no 'causal nexus,' not being able to form such abstractions from his feelings."

It may be remarked, by the way, that it is a strange and misleading abuse of language to speak of "thinking in sensations;" one might as well use the phrase "talking in respirations."

Finally he tells us:‡ "The animal world is a continuum of smells, sights, touches, tastes, pains, and pleasures; it has no objects, no laws, no distinguishable abstractions such as Self and Not-self. This world we can never understand, except in such dim guesses as we can form respecting the experiences of those born blind, guesses that are always vitiated by the fact that we cannot help seeing what we try to imagine them as only touching. . . . . If we see a bud, after we have learned that it is a bud, there is always a glance forward at the flower, and backward glances at the seed, dimly associated with the perception. But what animal sees such things? What animal sees a bud at all, except as a visual sign of some other sensation?"

Surely Hegel was far more right than his critic, Mr. Lewes, in distinguishing human feeling from animal feeling, on the ground that thought is immanent in the former and not in the latter.

John Müller.

But long ago the world-renowned physiologist, John Müller, clearly laid down such distinctions, saying § that brutes may easily enough form associations between sensible perceptions, but that to form abstract conceptions of such operations as of something common to many under the notion of cause and effect, is a perfect impossibility to them. He distinctly says that:—

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* *Op. cit.* p. 156.

† 'Problems of Life and Mind,' vol. i. p. 127.

‡ *Op. cit.* p. 140.

§ See Müller's 'Physiology,' translated by Dr. Baly, 1842, vol. ii. p. 1347.

> "The cause of this difference between man and beasts does not lie in the comparative lucidity or obscurity of the impressions made on their minds respectively; for in this respect there is assuredly no superiority in the human mind. I am, therefore, of opinion that the human mind also would never derive from the mere experience afforded by the senses, and from habit, the general abstract idea of causality, unless it had a certain power of abstraction—a power, namely, of forming a mental something out of the returning combinations of two things of which one requires the succession of the other."—(See Müller's *Physiology*. Translated by Dr. Baly, 1842, vol. ii. p. 1347.)

He adds that although dogs will become accustomed to perceive that hats and caps of various forms are put on the head, to recognise their master whether naked or clothed, and sticks of different shapes, yet the notions of identity and constancy, as opposed to difference and variability, are beyond the limits of their psychical powers.

Man's lower psychical faculties.

It is undeniable, then, that Instinct, as made known to us in and by animals, is something very different from Reason in its developed condition. Such being the broad distinction between the highest psychical faculties of men and brutes, we may proceed to consider whether any of the *lower* faculties of the former can throw any light upon such highest faculties of the latter. In considering our highest mental powers, we have already seen that besides deliberate thought, inference, voluntary attention, active memory, will, moral judgment, and speech, we have direct perception, association, automatic attention, involuntary memory, indeliberate volition, sympathetic emotion, and emotional expression. It may be well here to look a little further at these and some cognate matters, though space will only permit us to do so in a very cursory manner.

In a healthy condition, digestion, assimilation, and growth are all performed by us in utter unconsciousness, as are the essential and intimate processes of respiration and reproduction; and all these are faculties shared by us, not only with every animal, but with every plant. Another faculty is shared by us with animals, and is ministered to by our nervous system, though still without the intervention of consciousness. This is the now familiar power of "reflex action," a power which gives rise to movements in response to unfelt stimuli, such movements becoming positively more energetic with the advent of insensibility.*

Thus when the back has been broken by an injury so that the patient has no longer the slightest power of feeling with his lower limbs, yet none the less the foot will withdraw itself from tickling as if a sensation were consciously felt.

A medical friend mentioned to me a short time ago a curious instance of the external manifestation of apparent self-consciousness which none the less was really absent. He was removing a lady's finger who was under the influence of nitrous oxide. All the time she was weeping and exclaiming, "Oh, my poor finger!" &c. Yet, on recovery, she had not at first the slightest knowledge that the operation had been performed.

As to the lower animals, multitudes of experiments demonstrate that the performance of varied and complex consentaneous movements may be unaccompanied by even sensation—as in the case of the lady, or of the patient with the fractured spine. Thus a frog which has been decapitated will none the less join its hind legs together and push away a probe introduced into the cloaca. Even more remarkable is the fact that a frog which has not only lost its head but even the greater part of its body also, will similarly act with apparent volition. The case alluded to is when the head is removed and also the posterior part of the trunk and the lower extremities, the part left being only the anterior portion of the body together with the arms. If this operation be performed on a male frog at the breeding season, and if, after its performance, the little wart-like prominence on its fore paw (which at that season is in the place of a thumb) be touched, the two arms immediately fly together in an embrace, just as they would do in a living and perfect frog in the act of clasping the female.

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* For good examples see Dr. Carpenter's 'Mental Physiology,' 1874, p. 70.

There is, however, another class of actions which in us result, indeed, from sensations, but which take place automatically, and without the intervention of our will, or even of our attention.

Thus, when an object suddenly approaches our eye, the eyelids may close almost simultaneously with the experience of the sensation. A sudden or unwonted sound will cause the whole frame to start—a direct and immediate sense-perception, producing a result before we have time to inquire into the cause of that affection of our sense. The act of swallowing an object placed far back in the mouth is probably simply reflex, but, as Dr. Alison has remarked,* the initial act of deglutition, that of passing the food backwards from the tongue to the *isthmus faucium*, is due to a sometimes almost irresistible propensity to swallow whatever grateful food or drink is in the mouth. Again, as to the act of sucking, Bichat says:—

> "It is instinct, which I do not understand, and of which I cannot give the smallest account, which makes the infant, at the time of birth, draw together its lips to commence the action of sucking."

Indeed, actions of this kind are commonly spoken of as *instinctive;* and such are those we perform in walking through crowded streets absorbed in a reverie, or in running up or down stairs—when, indeed, any direction of the attention upon our successive actions tends but to mar them. Allied to these actions, also, are the wonderful wanderings of somnambulists. Dr. Carpenter gives† an amusing account of the spontaneous production of movements in response to felt stimuli on the part of certain somnambulists. He says of such that, if their arm be

> "advanced forward in the position of striking a blow, ... the somnambulist is very apt to put it into immediate execution." On one occasion, when Dr. Carpenter was present, "a violent blow was struck, which

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* See Todd's 'Cyclopædia,' vol. iii. p. 4.

† 'Mental Physiology,' 1874, p. 605.

chanced to alight upon a second somnambulist within reach; his combativeness being thereby excited, the two closed and began to belabour one another with such energy that they were with difficulty separated. Although their passions were at the moment so strongly excited that, even when separated, they continued to utter furious denunciations against each other, yet a little discreet manipulation of their muscles soon calmed them, and put them into perfect good humour."

A very singular and complete case of automatism has occurred in France,* where a man who was severely wounded in the head in the late war passes a day or two of each month in a condition in which his consciousness seems entirely to disappear, and every sense but touch is dormant, while his acts are entirely directed through the suggestions offered to him by objects he feels.

But apart from all abnormality, such actions as walking and talking, or playing the piano, show that wonderful effects may be produced by the sensibility, apart from self-consciousness, and show how wonderfully different is sense-perception from thought.

Miss Cobbe's remarks on this matter may be here referred to. She says of music-playing:—

"Here we seem not to have one alone, but a dozen. Two different sets of hieroglyphics have to be read at once, and the right hand has to be guided to attend to one of them, the left to another. All the ten fingers have their work assigned as quickly as they can move. The mind—or something which does duty as mind—interprets scores of A sharps, and B flats and C naturals into black ivory keys and white ones; crotchets and quavers and demisemiquavers, rests, and all the mysteries of music. The feet are not idle, but have something to do with the pedals; and if the instrument be a double-action harp (or an organ), a task of pushings and pullings more difficult than that of the hands. And all this time the performer—the conscious performer—is in the seventh heaven of artistic rapture at the results of all this tremendous business, or perchance lost in a flirtation with the individual who turns the leaves of the music-book, and is justly persuaded she is giving him the whole of her soul."—(See *Macmillan's Magazine*, November 1870, p. 26.)

We could hardly wish for a stronger instance of how sensations may coalesce and become agglutinated together in complex aggregations so as to act independently of intelligence. Moreover, even where actions are distinctly attended to and deliberately willed, all the several nervous and muscular acts which condition such actions are performed unconsciously and involuntarily.

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* See 'Medical Times' for July 28th, 1874. This case was cited by Professor Huxley, at Belfast. See 'Nature,' of September 3rd, 1874, p. 364.

A striking and very complete demonstration of the difference between sense-perception and thought has been presented by a distinguished writer in the 'Dublin Review'* as follows:—

> "Let it be supposed that I am the spectator of a great battle. Posted upon the vantage ground of a lofty tower, I see it begin, continue, and come to an end. Early in the morning, whilst the rays of the summer sun are yet slanting nearly level across the plain below, one host is coming on and massing its battalions where the slight rise of the ground meets the sky. Opposite to it is the vast irregular semicircle of the enemy, half hidden in dips and hollows, one flank resting upon a wood, and a broad high road running through the centre of his position. The battle begins with the advance of a strong division on one side, and a heavy fire of shells from batteries of both the armies. The advancing forces are met by others; the sharp cracking and rattling of the rifles mingles with the roar of the cannon; more forces engage; the battle is general all along the line. The noise and the smoke confuse the spectator. There is a retreat, advance, flight, first on one part of the field, then on another. Bodies of troops are broken, the dead begin to strew the field, and the bearers of the wounded pass swiftly between the battle and the rear. Brilliant masses of cavalry thunder down upon bright lines of bayonets, that wither them with far-reaching death. Officers gallop hither and thither; the reserves come up; shouts as of victory are heard, and with a general advance of one army, the other is driven back, broken, put to flight, slain, or taken, until the wave of war seems to pass away over the sky-line from whence in the morning the attack had been made. The sun sets and the moon rises upon reek, blood, dead and dying men, plunderers, slowly vanishing smoke, and what seems like silence. All this scene I have taken in with my senses. Complicated as it has been, I have followed it with accuracy, estimated distances and velocities correctly, and formed a fair impression of what has actually been transacted. What is more than this, I have that scene with me still, although it is past never to return. I can recall it on the following day, a year after, now. And when I recall it, it seems to be the same in its details as when I saw it. The battle-field comes back to me with its apparent

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* See the Number for July 1871, vol. xvii. pp. 26–34.

space and breadth—the horizon, the wood, the hollows, and the road. I realize the colour—the green of the grass and of the springing corn, with their different shades, the darker wood, the red and the blue of the massed troops, the glitter of helmet, bayonet, and scabbard, the flash of sabres, the lightning and black storm of the guns, great and small. I seem to hear the sounds. The din of roaring culverin and bursting missile, the noise of men and of horses, the far-off rushing, audible and desperate, so far away—how clear they come back! And I distinguish in my fancy all the movements and manœuvres of that hard-fought day: the charges, the mêlées, the retreats, the pursuits. Many a slight and momentary scene or sound revives—the gallant rider throwing up his arms as the fatal bullet found him out, the plumed hat with which the field officer waved on his men, the mad riderless horse that galloped my way, the wild shriek that once and again had come up out of the uproar and appalled me. It all remains; not perhaps as fresh to-day as it was yesterday, but quite unmistakeable; and it is probable that I shall carry it with me to my last moments. If I lose any of the details I can often recall them by first of all recalling what preceded or followed—one fragment of the picture suggests another. And even if I meet with similar details in quite other scenes, my battle is brought back to my imagination. The harmless firing of volunteer artillery recalls the fearful volleys of that day. I cannot see the smoke of a weed fire hanging in the air of a March afternoon, or watch the mists curling along the sides of a wooded hill after rain, without having the lurid canopy of that field in my thought again. When I mount a church tower, and look out over Yorkshire wold or Cornish moor, I range my armies as they once stood on another plain far away. The smell of the blue-bells never fails to make me think of that day, for there was a patch of blue-bells under the trees by my post of observation. Whenever I see again that peculiar arrangement of the clouds that marked one moment of the day, I recollect the tremendous rush of cavalry there was just then. Nay, if I had reason during the fight to fear for my own life or safety, there are moments when a tremor of my nerves, proceeding from fear or ill-health, or from surprise, will carry me back from the midst of a crowd and from the engrossment of interesting conversation to the moment when I stood solitary and anxious so long before upon the tower."

He goes on:—

"Let us suppose that the man who witnessed the battle already mentioned had lived for several years after it, and neither during its occurrence nor since had travelled out of the region of impressions and reproduction described above. And let it be supposed that, one day under circumstances of peculiar quietness and solitude, there suddenly arose within his mind a reflection—the reflection, for instance, that the battle after all was utterly *useless*. Surely this is a step into a higher atmosphere. He did not see that in the battle itself. 'Utility' did not come in through his eyes and ears. It certainly did not exist in the battle. For the same reason it could not have existed, and so been impressed on his sense, in any other battle or in any other incident whatever. Besides, even if it were possible that it had existed elsewhere, and been caught by the sense, the difficulty would still remain of accounting for its connection with that particular battle—connected, be it observed, not as when one sight or sound suggests another without suggesting a relation, but by a definite process of affirming the battle to be what it did not at all declare itself to be. Can a relation or an affirmation be given in sensible impression—in reiterated shocks of the sense? This is the deeper question which is forced upon us. We may leave out of consideration the abstract 'utility' and the difficulties attending its origin and application. The question is, Can the sense say anything—make a judgment at all? Can it furnish the blank formula of judgment—the 'is,' in 'A is B'? The grass of the battle-field was green, and the sense gave both the grass and the greenness; but did it *affirm* that 'the grass is green'? It may be answered that 'grass' and 'green' together form one complex sensible object, which is an object under space and time, and therefore of sense. But against this the rejoinder at once is, that the sense may indeed take in and report (so to speak) a complex object, but that in this case the question is, not about the complex object, but about the *complexity* of the object. It is one thing to see green 'grass,' and evidently quite another to affirm the *greenness* of the grass. The difference is all the difference between seeing two things united and seeing them *as united*. It may be further contended that 'grass' is an object of sense, and 'greenness' also is an object of sense, being the remembrance or revival of a certain frequently-repeated sensation, which, in order to label it, has been denominated greenness; and since both the terms of the judgment are objects of sense, the juxtaposition or composition of the terms may also be effected by the sense. But the reply again is evident. 'Green,' in the sense of 'greenness,' cannot have come from the sense—that is, from any faculty which is impressed only by a repetition of shocks in space and time: for first, it is not the greenness of any particular object, but greenness in general; secondly, it is not the greenness of all the green objects experienced in the past, but, as is admitted, a general idea acquired from these, and labelled or named; and, thirdly, even if it were the greenness of a particular sensible object, the sense, as we have already contended, could not have given it, because the sense only gives 'green.' A further important consequence follows. If in the judgment 'the grass is green,' 'green' cannot have come altogether from sense, then neither can 'grass' have come altogether from sense. In other words, 'grass' seen or known by sense is a different mental object to 'grass' as the term of an affirmation or judgment. For, in this particular judgment, of what is 'green' affirmed? Of this plant called 'grass.' But 'green' is a part of the object 'grass' as it comes to the sense. The sense knows no such thing as green and no such thing as grass existing separately, over against each other, comparably; it only knows a particular plant which would not (by hypothesis) be this particular plant at all unless it were green. And therefore, just as the term 'green' in the affirmation contains in it an element not furnished by sense, so does the other term 'grass.' It is evident then, that not only must we say of a judgment that the relation it expresses by the word 'is' cannot have been furnished by sense-impressions, but we must also say that the very *terms* of that relation or judgment must also have been derived from another source.

"It need hardly be insisted that the terms of this judgment, let alone the 'is' of the judgment, are independent of space and time. Not only so, but they so absolutely exclude and transcend space and time that to think them under space and time would be to destroy them. 'Green,' as we have so often said, is not this greenness, but greenness in general; but no such thing as greenness in general exists *in rerum natura*, or can be conceived to exist. But if greenness be thought under space (so much) and time (so long) then it is no longer greenness, but some green thing. And 'grass' also, in the judgment, is independent of space and time. For to judge that grass is green implies, as we have said, a mental separation of this grass from its greenness; for you cannot compare two things between which no separation exists.

"But this grass does not exist in space or time separated from its greenness; and so far as it is thought under space and time, it actually is (the same as) green. Therefore as it occurs in the given judgment, it excludes space and time. And the same reasoning might be made as strongly in regard to the copula, 'is.' If a brute could think 'is' brute and man would be brothers. 'Is,' as the copula of a judgment, implies the mental separation and recombination of two terms that only exist united in nature, and can therefore never have impressed the sense except as one thing. And 'is' considered as a substantive verb, as in the example 'This man is,' contains in itself the application of the copula of judgment to the most elementary of all abstractions—'thing,' or 'something.' Yet if a being has the power of thinking—'thing,' it has the power of transcending space and time by dividing or decomposing the phenomenally one. Here is the point where instinct ends and reason begins."

This author also well remarks* that excess of sensation paralyses the sense, disintegrating the tissues; but with regard to the "abstract" no amount of clearness or definiteness injures. "The sensible eye may be blinded by light, but the eye of the mind was never blinded by truth."

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* *Op. cit.* p. 33.

The existence of emotion apart from intellectual apprehension need not again be more than adverted to, and little need be said as to that spontaneous tendency to imitation which at least most of us possess in some degree. As to this latter matter, Mr. Darwin remarks:—

> "This is exhibited in the most extraordinary manner in certain brain diseases, especially at the commencement of inflammatory softening of the brain, and has been called the 'echo sign.' Patients thus affected imitate, without understanding, every absurd gesture which is made, and every word which is uttered near them, even in a foreign language."—See his *Expression of the Emotions*, p. 356, where he refers to Dr. Bateman on "Cephalea," 1870, p. 110.

List of them.

To sum up, then, what our rapid survey has seemed to teach us about ourselves, it seems we may establish the following propositions: Man is a persisting being, consisting of a complex organism, possessing, besides the highest psychical powers already enumerated, the following powers and activities also:—

1. *Vegetative* powers of nutrition, growth, and reproduction.
2. A power responding to unfelt stimuli by means of nervous interconnections—*reflex action*.
3. A power of inadvertently performing appropriate actions in response to felt stimuli, such actions, termed *instinctive*, being provided for beforehand by the special organisation of the body.
4. A power of experiencing sensible pleasure and pain.
5. A power of indeliberately perceiving sensible objects, of which some start or exclamation may be the sign —*sensible perception*.
6. A power of effecting the coalescence, agglutination, and combination of sensations in more or less complex aggregations, and so simulating inference.
7. A power of automatic or *organic memory*, which may exhibit itself in unintellectual imitation.

8. A power of responding by appropriate actions to pleasurable and painful sensations and emotions—*organic volition.*
9. A power of experiencing vague pleasurable and painful feelings—*emotional sensibility.*
10. A power of expressing such feelings by sounds or by gestures understood by our fellows, and replied to by corresponding sounds and gestures — *emotional language.*

The above ten groups are composed of powers and resulting actions which may be performed without deliberation and self-consciousness. For these groups it is necessary that the soul should sensibly perceive existing things, but it is not necessary that it should intellectually perceive their existence; that it should feel itself existing, but not that it should intellectually recognise its own existence; that it should feel relations existing between objects, but not that it should recognise them as relations; that it should remember, but not intentionally seek to recollect; that it should feel and express emotion, but not that it should intellectually advert to it; that it should seek the pleasurable, but not that it should consciously make such pleasure its deliberate aim.

Their relation to the psychical faculties of brutes.

We have already seen that the Instinct of animals is something very different from our developed Reason; but their highest psychical faculties appear to answer pretty closely to the above indeliberate human faculties, and thus we come to see not only what Instinct differs from, but also what it resembles.

The development of the individual.

The remark will here naturally occur to many that reason is only gradually made manifest in ourselves, and that the history of the human individual seems to show that the indeliberate faculties may grow into the deliberate ones, and thus the latter can only be considered as differing from the former in degree, and not in kind.

To this it may be replied, that one and the same being may most undoubtedly possess faculties of different kinds (as we possess the power of thought, and also the power of pressing down by our weight any object on which we stand), and these different faculties may manifest themselves at different times, some remaining for a season in a latent condition. The fact of our not perceiving at first in the infant the latent higher powers, may be merely due to the imperfection of our powers of observation, like our inability to distinguish, at a certain stage, the embryos of two widely different animals, which inability no one thinks of advancing as an argument in favour of their identity in the face of the divergence which subsequent development makes manifest.

This hypothesis of latency accounts for the facts, since it allows the recognition of a difference in kind between the deliberate and the indeliberate faculties. Two faculties are distinct *in kind*, if we may possess the one in perfection without thereby implying that we possess the other; and still more so if the two faculties tend to increase in an inverse ratio, the perfection of the one being accompanied by a degradation of the other. Yet this is just the distinction between the instinctive and the intellectual parts of man's nature. His instinctive actions are, as all admit, not rational ones; his rational actions are not instinctive. Even more than this, we may say the *more* instinctive are a man's actions the *less* are they rational, and *vice versâ;* and this amounts to a demonstration that reason has not, and by no possibility could have been, developed from instinct. In man we have this inverse ratio between sensation and perception, and in brutes it is just there where the absence of reason is most generally admitted (e.g., in insects) that we have the very summit and perfection of instinct made known to us by the ant and the bee. That instinct and reason then are so distinct, is made manifest by the inverse relation existing between the two. The intensification of sensation diminishes the power of intellectual action, while intense intellectual pre-occupation deadens the sensitive faculties. Sir William Hamilton long ago called attention to this inverse relation; but when two faculties tend to increase in an inverse *ratio*, it becomes unquestionable that the difference between them is one of kind.

On the other hand, no power may be assumed as latent unless its existence is subsequently made known in the same individual, or in others of the same species. We may fairly assume rational powers to have been latent in an infant that died a week old, because such powers exist plainly in all men normally constituted; but we have no right to assume that rationality is latent in brutes, because no brute has been known ever to perform one single action for which the presence in it of faculties like our own indeliberate faculties will not amply account.

Human automatism.

Professor Huxley has lately* made public a thesis which, as to part of it, sorely needs amplification and explanation. By reference to a series of interesting experiments on mutilated frogs, he supported a view as to the psychical faculties of brutes which is identical with that here maintained—the view, namely, that animals are sentient automata. But he added the expression:—

> "Undoubtedly, I do hold that the view I have taken of the relations between the physical and mental faculties of brutes applies in its fulness and entirety to man."—*Op. cit.* p. 366.

Now, by this expression, Professor Huxley may mean, either (1), simply that men have all the faculties of brutes, or (2), that they have no more than the faculties of brutes. But he can hardly mean the first, for it is the merest truism which no one thinks of denying. *Of course*, we are conscious automata, as, equally of course, we have the same vital powers as cabbages have; nay more, we agree even with pieces of rock and lumps of clay, in that we are coherent masses of matter, and not mere loose aggregations, like heaps of sand. But because we possess the properties of clay or cabbages, it by no means follows we have not other properties also; and similarly, because we are, as we all know, sentient, conscious automata, it by no means follows that we are no more than such automata. The first meaning suggested cannot then be his true meaning. Yet the second meaning seems at least equally open to objection. It is so open for two reasons: first, because it contradicts the Professor's express declaration on a former occasion that the human will does count for something; secondly, because it contradicts, as we have seen, the primary and ultimate declarations of consciousness. It is all very well to profess not to care for consequences; but, after all, the consequence that otherwise two right lines would have to inclose a space, is a sufficient reason for asserting the equality of the bases of two triangles having two equal sides inclosing equal angles.* There is yet another reason why the Professor cannot have meant to deny every element of spontaneity to the human will: namely, because he cites as on his side Calvin, Malebranche, St. Augustin, and Kant! But even Calvin never denied free-will in the sense in which it is denied by Mill and Spencer. He did not deny such power to the *natural man*, but only to man in that *un*natural, degraded condition in which, according to the Calvinistic doctrine respecting "the fall," he *now* is. A very able writer in the 'North British Review' † remarks that very erroneous opinions are current about the bearing of Calvinism on that doctrine of Mill, Spencer, and Huxley called "Determinism:"—

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* At the meeting of the British Association at Belfast. See 'Nature' for September 3rd, 1874, pp. 362–366.

"Determinism and predestination spring from premisses which lie quite in separate regions of thought." "The predestinarian is obliged by his theology to admit the existence of a free will in God, and, as a matter of fact, he does admit it in the devil." "But the final consideration, which puts a great gulf between the determinist and the predestinarian, is this, that the latter asserts the reality of the vulgar notion of moral desert. Even if he were not obliged by his interpretation of Scripture to assert this, he would be obliged to assert it in order to help out his doctrine of eternal reprobation."

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* Professor Tyndall introduced Professor Huxley to his audience as a man "perfectly fearless in his utterances." But it may well be asked *what has any one to fear* in giving expression to such views as Professor Tyndall appears to favour? Surely it is quite opposite views which involve social persecution, which entail political ostracism and the denial of State aid. No fear *of man* need deter any one. If, then, Professor Tyndall refers to "the fear of the Lord" as that the absence of which is praiseworthy, he selects for eulogy that which is not proverbially considered as the indication of a great advance in wisdom.

† For April 1870: "The Will and Free-will."

Reverting to our subject, it seems, at least, that I have Professor Huxley with me when I assert that there are no grounds for considering brutes as anything more than sentient automata, and thus Instinct becomes, in a certain degree, intelligible to us through our own lower psychical faculties. As animals have reflex action, so also have we; as animals have direct and indeliberate sentient (i.e., instinctive) action, so have we; but that we have also vastly more, enough, it is hoped, has been said even in this chapter to make manifest.

But can any further light be thrown upon the nature of Instinct than that derivable from its comparison with our lower mental powers?

Curious views as to the nature of Instinct.

Mr. Lewes and Mr. Herbert Spencer agree in entertaining a very singular view as to Instinct—namely, that it is superior to intelligence, in that either by its failure it becomes intelligence, or that it is itself "lapsed intelligence." Mr. Spencer, indeed, shortly describes* Instinct as "compound reflex action"—a complex reflex action, in which sensation intervenes, established by the "survival of the fittest;" and, as it becomes more and more compound, failing to be so ready and decided in its action, and so becoming "intelligence." Thus, according to this author, "Reason" is a negative entity—a failure of Instinct! It may be mentioned, by the way, that, in his chapter on Instinct, Mr. Spencer shirks considering the most difficult phenomena, saying not a word of such instincts as those of ants, termites, and the wasp *Sphex*.

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* 'Psychology,' vol. ii. p. 433.

Mr. Lewes tells* us :—

> "In instinct there is not intelligence, but what *was once intelligence;* the specially intelligent character has disappeared in the fixed tendency. The action which was tentative, *discriminative,* has now become automatic and irresistible. . . . . . The objection will doubtless be raised that instinct is wholly destitute of the characteristic of intelligence in that it has no choice; its operation is fixed, fatal. The reply is twofold: in the first place, the objection, so far as it has validity, *applies equally* to judgment, where, given the premisses, the conclusion is fatal, no alternative being open. Axioms, in this sense, are logical instincts. Thus, the higher intellectual process is *on a level* with this process said to be its opposite. And in the second place, the element of *choice* always *does* enter into instinct; although the intelligent discrimination of means to ends may be *almost* absent, it never is *entirely.* The *guiding sensation* which directs the impulse is always selective. If we restrict intelligence to the logic of signs, to *ideas,* there cannot of course be anything intelligent in instinct; but if we extend it—as we must—to the logic of feeling, the dispute will cease."—*Problems of Life and Mind,* p. 130, *note,* and p. 141.

Now, this passage is worthy of notice as the latest declaration of the Sensist school on this question. But, in the first place, we affirm that not to restrict intelligence to intellect is absurd—a contradiction in terms—"ideas" not "feelings" being the exclusive domain of the intellect. That there *is* a logic in feeling—that there is a logic in even unsentient nature—we are far from denying; but that logic is not the logic of the crystal nor of the brute, but of their Creator. Mr. Lewes evidently here means by "choice" not a deliberate, self-conscious process, but a direct, indeliberate action, such as may automatically result from the association of sensible impressions. Indeliberate actions of this kind are not to be denied to brutes, but they are not acts of *Reason,* though they are often enough made use of by rational beings, just as digestion and secretion are not acts of "Reason," though they are acts of a rational being who digests and secretes.

Mr. Lewes's first answer ignores the very main distinction between Instinct and Reason—namely, the presence of self-conscious intellectual action in the latter, and its absence in the former. Instinct is "fatal," but *blind;* it does not *know* it is compelled, nor see the *necessity* of its action. Reason is fatal, but *sees;* it *does* know it is compelled to draw out explicitly in a conclusion the truth implicitly contained in given premisses, and does see the *necessity* of intuitive truths, such as the principle of identity. Moreover, if it can be affirmed that "Instinct" is "lapsed intelligence," then a conscious, deliberative, discriminative faculty must once have been exercised by wasps, bees, and ants in all such actions as are now instinctive, and these creatures must once have possessed a rationality of which the course of ages has deprived them.

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* The italics are mine.

Mr. Herbert Spencer's climax is still more curious, as, according to him, "Reason" is a "failure of Instinct"—an "imperfect adjustment." So with the increasing adjustment of "inner relations" to "outer relations," it must tend more and more to disappear. But will and memory are also represented by him as transient accompaniments of an incomplete state of such adjustment; and, according to Mr. Spencer, "feeling" must also disappear, when the adjustment becomes perfect, along with memory and reason. The highest mental condition then, according to this writer, would be one in which volition, intelligence, memory, and even feeling, have all disappeared in favour of a "perfect adjustment." In other words, the most highly-developed human being would be an absolutely *senseless and unconscious automaton.* This is the "higher" and "nobler" goal to which the countless pulsations of cosmic forces are supposed to be ultimately tending in their integrating and constructive action; the object to promote which our most strenuous and self-denying efforts, and our most fervent desires, may most worthily be directed.

The views of Mr. Lewes and Mr. Spencer cannot be accepted by us, if for no other reason than that they gratuitously demand us to admit, in bees and ants, faculties for the existence of which there is no evidence, and without which all their activities can be sufficiently explained. Quite another cause than "lapsed intelligence," or even "lapsed sensible perception and association," is required to account for the actions of the wasp *Sphex*, for those of the carpenter bee, and for our own instinctive actions; and if "Instinct" is required to explain these, it may equally be used to explain a multitude of other acts also. The principle once admitted, all is admitted.

What is Instinct?

But how, then, are we to understand "Instinct?" what is it? The general notion of Instinct is that of an imparted peculiar

> "impulse urging animals to the performance of certain actions which are useful to themselves or to their kind, but the use of which they do not themselves perceive, and their performance of which is a necessary consequence of their being placed in certain circumstances and feeling certain sensations."—Todd's *Cyclopædia*, vol. iii. p. 3.

We have seen, more or less clearly, what it is *not*, and by what essential differences of kind it is distinguishable from Reason. But its very existence is altogether denied by some contemporary thinkers, in spite of the manifest peculiarity of many animal actions, the performance of which cannot be denied. This denial is perhaps, in part, due to a misapprehension. Certainly Instinct has no real substantial existence at all distinct from the life of the animal which exhibits it, just as "life" itself is nothing substantially distinct from the creature living. Perhaps, then, the great objection which many men seem to entertain against the recognition of "Instinct" as something to be distinguished as existing, and to be separately considered and treated of, is their idea that by such consideration and treatment a metaphysical abstraction is taken for a substantial entity. Now Instinct *as* Instinct is, of course, a mere abstraction, and exists only in the mind, though it exists concretely enough in animal actions of a special kind. Instinct is, concretely, the animal organism energizing in certain ways.

Mr. Lewes speaks the language of the true philosophy when he says:—

> "Co-ordination, mind, and life are abstractions: they are realities in the sense of being drawn from real concretes; but they are not realities existing apart from their concretes otherwise than in our con-

ception; and to seek their objective substratum we must seek the concrete objects of which they are the symbols."—*Problems of Life and Mind*, vol. i. p. 281.

This is the very teaching of St. Thomas.

All the functions of each brute animal, all instinctive actions included, necessarily go with structure, and vary with it, structure and function being like the convexities and concavities of a curved line, one necessarily accompanying the other. To explain either thoroughly is to explain both. The origin of one is necessarily the origin of the other. Modern science, by its investigations of the simplest organisms, has abundantly shown that life cannot be a consequence of organisation; but neither need it be a cause, but an inseparable accompaniment; life of a particular though merely sensitive kind emerging from potentiality into actuality at the very moment that matter assumes a certain special and definite condition. "Instinct" then, no more than "structure," can be explained by the survival of the fittest.

What it is.

Thus the "instinct" of each animal is an abstraction denoting the faculty of performing that group of actions which are the inseparable accompaniments of its structure, as stimulated by sensation. But such "faculty," again, is, of course, nothing distinct from the "soul" of each animal; which soul, once more, has no substantial existence apart from the living animal itself.

This is not the place to defend the doctrine that the "soul" of each animal is no mere plexus of physical forces transformed by passing through a certain kind of matter so as to simulate a unity, but is a real, existing, single unity, a single form of force (so to speak) evoked by concurrent circumstances from potentiality into actuality. Nevertheless, I may be permitted to here affirm my belief that this doctrine is the one which best accords with what science teaches—the doctrine, namely, that instinct is an abstraction denoting a particular kind of action of such animal soul.

Concurrent with such doctrine is the view, which I also accept, that the body of each living animal forms a true unity. The opposite notion, entertained by many, is that each organism is not a true unity, but that each organ, each part of an organ, and each physiological unit has its own independent life, one not subordinate to a higher unity; so that the whole forms a moving equilibrium of groups, of groups, of groups, of groups of parts. This was the view which Schwann's famed "cell theory" favoured—a theory once received, especially in Germany, with an enthusiasm like that which has greeted the Darwinian theory, but which is now generally abandoned. Now, a lifeless, moving equilibrium—such, e.g., as a fountain with a complex arrangement of jets—is manifestly but the result of an adjustment of active physical powers, continuing for a longer or a shorter period. During its continuance the action of each separate physical force can be distinctly traced in the result; there is no, even apparent, internal principle of cohesion, still less is there any tendency to reproduction. Every living being, on the other hand, has manifestly a tendency to undergo a definite cycle of changes when exposed to certain fixed conditions, such cycle ending with the reappearance of that form with which it started; an egg thus ultimately resulting in the production of another egg, and a seed of another seed. Moreover, in each organism the various parts are *reciprocally* ends and means.

Unity of each organism.

Instead, then, of considering an animal as a congeries of groups of groups of independently living units, it seems to me more accordant with reason to consider it as one living whole, in the life of which each part, in its degree, participates. Thus the whole organism forms one continuum. For our convenience as anatomists we actually separate it into parts in various ways, and we consider it as made up of such parts; but, in fact, it is not really made up of parts at all, but is one whole, locally differentiated in various ways and in varying degrees. To illustrate my meaning we may recall the fact that the air-vessels of plants (like the tracheæ of insects) were once said to be kept open by means of a spiral filament within them, whereas now it is recognised that there is no such filament, but that the walls of such tubes are simply, in fact, but *spirally thickened*. Similarly, nerve and connective tissue, bone and cartilage, tendon and muscle, are now recognised as imperceptibly graduating one into the other, and being actually continuous—nay, even the very blood merges with, and is merged with, the solid portions of the body where the latter are in process of assimilating and increasing. All this, however, is but natural, seeing that the whole of these parts are but various differentiations of the primitive germinal substance.

Definition of Instinct.

Once more then, instinct appears to be a faculty of the feeling, imagining, operating organically, remembering and automatically acting animal soul, which faculty is in most intimate connection with the organisation of each species, so that upon the recurrence of certain sensations, external or internal, a definite series of actions is initiated, which, from the beginning of its existence, each species is specially destined to perform, and for the performance of which its organisation is specially developed. In short, it is action like reflex action, but which takes place in consequence of feelings or imaginings. Such instinct, like the soul, of which it is a faculty, emerges from potentiality to actuality *pari passu* with the assumption by matter of the proximately fit condition; and if it were possible for us artificially to construct any given kind of animal, we should necessarily give rise to the instinct in giving rise to the structure.

Energy of matter.

But some of my readers may exclaim—Can such wonderful powers be latent in mere brute matter? Is it conceivable that the arrangement of matter, in whatsoever conditions, should be the occasion of evoking from potentiality to act a power not only of living and reproducing, but of feeling, of sensibly cognizing, of forming associations of sensible images, of connecting therewith various emotions, and be capable of exhibiting the complex instincts of the ant, the fidelity of the dog, and the simulation of reason of the elephant? To such objectors I would reply—How can you show that your conception of matter as it exists is adequate? Matter pure and simple, the *materia prima* of philosophy, nowhere exists actually, nor ever did so exist. Every form of matter known to us, even the simplest, possesses certain active powers, and is combined with a definite "form." New combinations and collocations of matter are continually evoking new forms, presenting to us other powers before unknown to us. What right, then, has any one to deny the existence in matter of latent potentialities which experience and reason combine to show us are now actually there, and, in all probability, have been latent antecedently? That matter should show us actions which embody a *quasi* intelligence is the less surprising when we reflect that all nature teems with such unconscious intelligence. Reason, order, and activity pervade the material universe—the mineral as well as the animal and vegetable kingdoms. But, apart from man, such reason is in no material being conscious of itself; and the soul of man is, as we have seen, different in kind from the soul of every brute, and may therefore, as we have also seen, rationally claim another origin. The resemblance of the unconscious infant (whose instincts are less developed than those of many new-born beasts) to a mere animal, is but a superficial one, and results only from the imperfection of our powers of observation. That from the first the whole difference is latent, the result proves. It is like the superficial resemblance of an embryonic reptile to an embryonic bird, or even of an embryonic beast to an embryonic fish. The reptile never *is* a bird, nor the beast a fish, though the immature stages of development are superficially alike.

A new energy in man.

If the history of mankind is sketched out by that of the child's development, then we may conclude that man was never a mere animal. Instinct and Reason seem to form two distinct regions—two distinct kinds of activity—whereof the former serves as the material for the latter. In order that mere instinctive faculties may become rational, there is needed the introduction from without (as Mr. Lewes well says) of a new form or force, which is self-conscious, and so can distinguish itself from what is not itself, and can analyse both. With this new principle once introduced, mere sensation is transformed into conscious sensibility; the imagination, from being passive, becomes active and creative; appetite becomes passion, and attachment friendship. The association of images prepares the association of ideas. Association becomes inference. In a word, from the mere animal, we have man; and what was but direct, indeliberate, and unconscious Instinct, becomes reflex, deliberate, self-conscious Reason, with true memory, intelligence, and will.

Grounds of this decision.

Science demands that nothing should be deduced from facts which such facts do not fully warrant; and if any phenomena can be explained by one agency the existence of which we know, it is quite illegitimate to call in an additional and hypothetical one. It is here contended that there is no need whatever to credit brutes with intellect; first, because all the phenomena they *do* exhibit can be accounted for without it, while they *do not* exhibit phenomena characteristic of a rational nature. But besides this negative argument, a positive one, to the same effect, may be drawn from facts which constitute an experimental demonstration: for if the germs of rationality existed in brutes, those germs would certainly have developed long ere this, so as to have produced unequivocal evidences of that faculty during the prodigious lapse of past geological time, especially if we were to accept the Darwinian practical infinity of past organic existence.

Stupidity of animals.

But in fact a book requires to be written on "the stupidity of animals." It is required on account of that tendency to exaggerate so-called animal intelligence (inverted anthropomorphism), and on account of that neglect of contrary instances, while apparently intelligent actions, which may be merely accidental coincidences, are eagerly seized upon.

Acts which would be reckoned as signs of extreme obtuseness and stupidity are common enough amongst animals usually reckoned as the most intelligent. Mr. Darwin mentions,* as one proof of the existence of sympathy in brutes (which no one denies), the familiar fact of a dog flying at his master's enemy. But in a sudden scuffle it is by no means unprecedented for a dog to fly at *his own* master. After all that author's wonderful tales about the rationality of crabs and snails it is interesting to read the following admission. He tells us,† on the authority of Mr. Harrison Weir, that if a pair of birds "which would naturally remain mated for life be separated for a few weeks during the winter and matched with other birds, the two when brought together again rarely, if ever, recognise each other."

But what dog, though he has seen fuel put upon fires again and again, ever puts on any himself to maintain the heat he so greatly enjoys?

Many readers may have had a pet cat who has now and again got a fish or chicken bone fixed between its back-teeth. The useless motions the animal makes with its paw are sufficiently irrational; but although the accident may have recurred again and again it will make the same struggles against the removal, by its master, of the object which distresses it, while as soon as it is removed the animal will go off, licking its jaws, without a sign of gratitude for the relief afforded. But even that animal reputed the wisest, the elephant, has, quite recently, in our Zoological Gardens, given proof of extreme stupidity in actually pulling off the end of its own trunk (which had got caught in a cord), instead of waiting till aid came or calling for succour and assistance before the injury instead of clamouring after it.

It would be easy to multiply instances of conduct, in animals of all the better-known classes, which if fairly considered are enough to prove the distinction in quality between the form or force which energizes in each animal and that which we know to exist in ourselves.

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* 'Descent of Man,' vol. i. p. 77.

† *Op. cit.* vol. ii. p. 109.

What, then, is the conclusion at which we must arrive with respect to brute animals—even those the most like us or the most seemingly intelligent? What is the lesson which nature seems to teach us in their regard?

Conclusion.

We may, it is here contended, learn from it and the evidence here adduced two lessons. The first is that in accepting testimony respecting the psychical characters of brutes, we should be especially on our guard against a certain common form of credulity and tendency to exaggeration—Biological Anthropomorphism. The second lesson is, that while we have abundant evidence of the sensitive and imaginative powers of brutes, we have both negative and positive evidence that the form, or force, which energizes in the dog, the bee, the elephant, the ant, or the gorilla, is one which is sentient but not rational—that it feels both pleasures and pains, but neither knows nor reflects upon the one or the other. Finally, we may conclude that the instinctive qualities of the brute may be more or less imperfectly understood by means of those lower powers of the human soul hereinbefore enumerated, which may be performed without deliberation and reflex self-consciousness, while all the efforts of the best-informed naturalists who desire to confound the nature of the brute with that of man but serve to bring out more forcibly the profound gulf which separates psychically man and the brute.

CHAPTER VIII.

LIKENESSES IN ANIMALS AND PLANTS.

> "The facts of mimicry and of the various kinds of homology as exhibited in comparative anatomy, teratology and pathology, reveal an internal force and dynamic agency, the soul, in each animal, which forms one indissoluble unity with its material frame."

Two kinds of likeness to be considered.

In considering the form and structure of animals and plants, amongst the different resemblances presented to our view there are two orders of likeness which it is intended here to notice.

The first of these orders of resemblance is one which is merely external; namely, the likenesses borne by different animals to others of more or less different nature, to plants or to inanimate objects, and likenesses borne by plants to others of more or less different nature or to animals. This kind of resemblance is termed MIMICRY.

The second of the two orders of resemblance extends to internal structure, and relates to likenesses of the kind borne by parts of one animal or plant to parts of other animals or plants, and it also relates to likenesses borne by one part of any animal or plant to other parts of the same individual.

Mimicry.

First as to Mimicry: "Mimicry" is a close and striking, yet superficial resemblance borne by some animal or plant to some perhaps very different object. A familiar example of mimicry is seen in the bee and spider orchis, and in clear-winged moths, which may be mistaken for bees. One of the most perfect examples of mimicry is afforded by an insect (of the grasshopper and cricket order) which is called, on account of the appearance it presents, the "walking leaf;" since both in form and colour its body so closely resembles a leaf that it is most difficult of detection when found amongst real leaves.

Mr. Bates was the first to call attention to the phenomenon as it exists amongst butterflies, and he may be called the discoverer of what he named "mimicry." Mr. Wallace, in his work on 'Natural Selections,' has brought forward* most interesting examples, serving to show not only the existence of these strange likenesses but the protecting influence which they, in many instances, exercise in favour of the creatures which exhibit them. One of the most complete instances is that afforded by an Indian butterfly, as to which he remarks: †—

> "But the most wonderful and undoubted case of protective resemblance which I have ever seen, is that of the common Indian *Kallima inachis*, and its Malayan ally *Kallima paralecta.* The upper surface of these is very striking and showy, as they are of a large size, and are adorned with a broad band of rich orange on a deep bluish ground. The under-side is very variable in colour, so that out of fifty specimens no two can be found exactly alike, but every one of them will be of some shade of ash, or brown, or ochre, such as are found among dead, dry, or decaying leaves. The apex of the upper wings is produced into an acute point, a very common form in the leaves of tropical shrubs and trees, and the lower wings are also produced into a short, narrow tail. Between these two points runs a dark curved line exactly representing the midrib of a leaf, and from this radiate on each side a few oblique lines, which serve to indicate the lateral veins of a leaf. These marks are more clearly seen on the outer portion of the base of the wings, and on the inner side towards the middle and apex; and it is very curious to observe how the usual marginal and transverse striæ of the group are here modified and strengthened so as to become adapted for an imitation of the variation of a leaf. . . . But this resemblance, close as it is, would be of little use if the habits of the insect did not accord with it. If the butterfly sat upon leaves as upon flowers, or opened its wings so as to expose the upper surface, or exposed and moved its head and antennæ as many other butterflies do, its disguise would be of little avail. We might be sure, however, from the analogy of many other cases, that the habits of the insect are such as still further to aid its deceptive garb; but we are not obliged to make any such supposition, since I myself had the good fortune to

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* Chap. iii. p. 45.

† *Op. cit.* p. 59.

observe scores of *Kallima paralecta* in Sumatra, and to capture many of them, and can vouch for the accuracy of the following details. These butterflies frequent dry forests, and fly very swiftly. They were seen to settle on a flower or a green leaf, but were many times lost sight of in a bush or tree of dead leaves. On such occasions they were generally searched for in vain; for while gazing intently at the very spot where one had disappeared, it would often suddenly dart out, and again vanish twenty or fifty yards further on. On one or two occasions the insect was detected reposing, and it could then be seen how completely it assimilates itself to the surrounding leaves. It sits on a nearly upright twig, the wings fitting closely back to back, concealing the antennæ and head, which are drawn up between their bases. The little tails of the hind wing touch the branch and form a perfect stalk to the leaf, which is supported in its place by the claws of the middle pair of feet, which are slender and inconspicuous. The irregular outline of the wings gives exactly the perspective effect of a shrivelled leaf. We thus have size, colour, form, markings, and habits, all combining together to produce a disguise which may be said to be absolutely perfect; and the protection which it affords is sufficiently indicated by the abundance of the individuals that possess it."

Not only moths, but also beetles imitate bees. Wasps and objects the most strange are also mimicked by beetles, such, e.g., as dung and drops of dew. There are also creatures called bamboo or walking-stick insects, which present a most striking resemblance to twigs of bamboo. Concerning these Mr. Wallace tells us:* "Some of these are a foot long and as thick as one's finger, and their whole colouring, form, rugosity, and the arrangement of the head, legs and antennæ are such as to render them absolutely identical in appearance with dry sticks. They hang loosely about shrubs in the forest, and have the extraordinary habit of stretching out their legs unsymmetrically, so as to render the deception more complete."

But there are facts yet more extraordinary. Some insects which mimic leaves, mimic even the marks made upon leaves by the ravages of other insects or by mould. As to this Mr. Wallace further informs us:† "One of these creatures obtained by myself in Borneo (*Ceroxylus laceratus*) was covered over with foliaceous excrescences of a clear olive-green colour, so as exactly to resemble a stick grown over by a creeping moss or jungermannia. The Dyak who brought it me assured me it was grown over with moss although alive, and it was only after a most minute examination that I could convince myself it was not." In speaking of a leaf-butterfly he tells us that:[*] "We come to a still more extraordinary part of the imitation, for we find representations of leaves in every stage of decay, variously blotched, and mildewed, and pierced with holes, and in many cases irregularly covered with powdery black dots, gathered into patches and spots, so closely resembling the various kinds of minute fungi that grow on dead leaves, that it is impossible to avoid thinking at first sight that the butterflies themselves have been attacked by real fungi."

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* *Op. cit.* p. 64.

† *Loc. cit.* p. 64.

Not to be explained by accidental variations.

These facts appeared to me some years ago to be of a nature which no amount of accidental minute indefinite variations acted on by the destroying agencies of nature (inducing the "survival of the fittest") could possibly account. I then said[†] (opposing the Darwinian hypotheses of the origin of species by natural selection): "Now let us suppose that the ancestors of these various animals were all destitute of the very special protections they at present possess, as on the Darwinian hypothesis we must do. Let it also be conceded that small deviations from the antecedent colouring or form would tend to make some of their ancestors escape destruction by causing them more or less frequently to be passed over, or mistaken by their persecutors. Yet the deviation must, as the event has shown, in each case be in some definite direction, whether it be towards some other animal or plant, or towards some dead organic matter. But as, according to Mr. Darwin's theory, there is a constant tendency to indefinite variation, and as the minute incipient variations will be *in all directions*, they must tend to neutralise each other, and at first to form such unstable modifications that it is difficult, if not impossible, to see how such indefinite oscillations of insignificant beginnings can ever build up a sufficiently appreciable resemblance to a leaf, bamboo, or other object, for 'Natural Selection' to seize upon and perpetuate. This difficulty is augmented when we consider how necessary it is that many individuals should be modified simultaneously" and similarly in order that slightly favourable variations may hold their own against the overwhelming force and influence of mere number. A consideration insisted on in the 'North British Review' for June 1867, p. 286; a consideration of which review has compelled Mr. Darwin to modify his views very importantly, and he has himself confessed that until reading this article he did not "appreciate how rarely single variations, whether slight or strongly marked, could be perpetuated."

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[*] *Op. cit.* p. 60.

[†] 'Genesis of Species' (Macmillan), 2nd edition, p 38.

"In these cases of mimicry it seems difficult indeed to imagine a reason why variations tending in a *minute degree* in any special direction should be preserved. All variations would be preserved which tended to obscure the perception of an animal by its enemies, whatever direction these variations might take, and the common preservation of conflicting tendencies would greatly favour their mutual neutralisation and obliteration, if we may rely on the many cases which have been brought forward by Mr. Darwin with regard to domestic animals."

As to the last cited examples of the imitation of mildew, &c., I added:* "How this double mimicry can importantly aid in the struggle for life seems puzzling indeed, but much more so how the first faint beginnings of the imitation of such injuries in the leaf can be developed in the animal into such a complete representation of them—*à fortiori*, how simultaneous and similar first beginnings of imitations of such injuries could ever have been developed in several individuals, out of utterly indifferent and indeterminate variations in all conceivable directions."

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* *Op. cit.* p. 41.

This shown by plants.

Further consideration and fresh observation have convinced me more and more of the justice of the above remarks. Their justice is however remarkably substantiated by the facts concerning mimicry, as it exists in plants, brought forward* by Mr. Alfred W. Bennett. These facts concern two kinds of mimicry, one kind relating to the whole habit and mode of growth of the plants, and the other referring to the development of some particular organ or part.

As to the first kind, amongst other instances he refers to the imitation of *Cacti* by the *Euphorbias*, found in Africa. He says: "Except when they are in flower, it is, indeed, difficult to believe that these African *Euphorbias* are not in reality *Cacti*: and the resemblance is not merely a general one; particular groups, and even species, of African Euphorbia imitate particular groups or species of American Cacti in the form and habit of the stem and the arrangement of the spines, so that it is almost impossible to distinguish between them."

As to the second kind of plant mimicry, he mentions that Kunge, a great authority on ferns, "considered the curious *Stangeria paradoxa* a cycad," and that Berthold Seemann found in the Sandwich Islands a variety of *Solanum Nelsoni*, "which looked for all the world like *Thomasia solanacea*," a resemblance as striking as that pointed out by Bates "between a certain moth and a humming-bird."

The objection that such instances are not parallel to animal mimicry because not occurring between plants which inhabit the same area, is rebutted by Mr. Bennett, who brings instances to the contrary. Amongst these may be mentioned the resemblance between the *Eucalypti* and *Mimosæ*, both Australian forms, and that between the winged-fruits (each a "Samara") of four genera of plants belonging to three distinct natural orders, all large shrubs or trees, and *all* natives of Brazil. He says: "Not only the form of the wing, but its very texture and the arrangement of the veins, are reproduced most accurately in all the species, a dissection of the fruit alone showing their essential difference in structure. So close, indeed, and deceptive is this resemblance when the plant is not in flower, that the very specimen" from which Mr. Bennett's drawing is made, "in the Berlin Herbarium, is labelled by so experienced a botanist as Klotzsch as *Securidaca;* and Walpers, in his 'Repertorium,' has erroneously described five species of *Seguiera* as *Securidacas.*"

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* See 'Popular Science Review,' January, 1872 p. 1.

Mr. Bennett's verdict as to all such cases of mimicry is to the effect that "no conjunction of external circumstances will avail to account for them, whether acting through natural selection or any other known process."

As to the bee orchis he observes: "It might well be assumed that the extraordinary resemblance of the flower of this singular plant to the body of a bee was designed to attract these insects to the flower; but, unhappily for this theory, the bee orchis appears to be one of the comparatively small number of plants that are independent of insect agency for the maturing of their seeds." Yet surely for minute accidental variations to have built up such a striking resemblance to insects we ought to find the preservation of the plant or the continuance of its race depending on relations between bees and it. It has indeed been suggested, in opposition to this contention, that there is no real resemblance, but that the likeness is "*fanciful!*" The denial, however, in the interests of an arbitrary hypothesis, of the fact of a resemblance which has struck so many observers, reminds one of the French philosopher's estimate of facts hostile to his theory—"Tant pis pour les faits!"

It seems, then, that these facts* of mimicry reduce us to the acceptance of a belief in an innate tendency implanted in certain races of animals and plants to assume the external semblance of creatures very different from them—a tendency the existence of which is to be explained by no mechanical conceptions, though in many instances the destructive agencies in nature must tend to keep true and to intensify such resemblances.

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* I have a note, which I am unable at this moment to verify, of the occurrence, near Mentone, of galls simulating cones on a juniper.

Second order of likenesses.

We may now turn to the second order of resemblance found in animals, i.e., likenesses in internal structure as well as external form—agreements and differences respecting which various very different explanations have been offered. The real existence, however, of the different kinds of resemblance about to be referred to, as facts, cannot be denied.

The number of these perceived varies with the direction of our attention.

In however many directions the human mind sends forth its energy upon surrounding nature, its activity brings just so many vistas of agreement underlying difference before its ken. Indeed, as Mr. Lewes says,* with, perhaps, some exaggeration of expression: "Science is in no respect a plain transcript of reality . . . but . . . an ideal construction in which the manifold relations of reals are taken up and assimilated by the mind, and there transformed into relations of ideas, so that the world of sense is changed into the world of thought." And again he declares:† "What we call laws of nature are not objective existences, but subjective abstractions." We say that these expressions are somewhat exaggerated, because what is the product of the "manifold relations of reals" must have some real foundation and some objective validity in the eyes of those who admit, as it seems Mr. Lewes does not, the known existence of an external world (of more than feelings) at all. Any one who admits such existence must also admit that the various ideal entities which are ultimately justified to reason as true ideals, have their foundation in their agreement with real objective existence, "truth" being a relation between "Being" and "an Intellect."

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* 'Problems of Life and Mind,' vol. i. p. 342.

† *Op. cit.* p. 300.

Natural classification.

The various groups into which animals and plants have been divided are of this nature, i.e., are ideal entities with an objective basis. Classes, orders, families, genera, and species exist *as such* only in a mind. Objectively, there is nothing but individual animals and plants. Nevertheless, the different biological groups also exist objectively in those facts of structure which various individual animals and plants present, and which serve for the definitions of such different groups. What Mr. Lewes says* (before quoted) of certain other abstractions applies here with perfect correctness: "They are realities in the sense of being drawn from real concretes; but they are not realities existing apart from their concretes otherwise than in our conception; and to seek their objective substitution, we must seek the concrete objects of which they are the symbols."

Natural classification, indeed, though formed by the mind, does not depend on the mind. It is not arbitrary, but is governed by the external realities of things. It is not that we *choose* to separate bats and whales from birds and fishes respectively, and put them both in the same class as that which contains also the lion and the antelope. We are *compelled*, by the multitudinous facts of animal structure, so to separate and so to class them. Moreover, such zoological classification is only possible because different animals are found to have like parts (parts alike as to their relations of position to other parts) which can be compared and contrasted, and can, by the agreements and differences they present, furnish us with the determining and limiting characters of the different natural groups.

Of parts and organs.

As it is with respect to the various groups of animals and plants, so it is with respect to the parts and organs which together compose each individual animal or plant. As the human mind surveys these parts and organs in different lights, it finds different series of unlikenesses and likenesses, extending along that line of thought which it elects to follow. Here again, however, the resulting groups of likenesses cannot be freely and arbitrarily established, but must follow objective reality. It is thus that fanciful notions which do not respond to the realities of things have to succumb and give place to conceptions which do harmonize with such realities.

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* *Op. cit.* p. 281.

Every bird and beast, every fish and insect, is formed of a complex aggregation of parts which are grouped together into an harmonious interdependency and have a multitude of relations, amongst themselves, of different kinds. The mind detects a certain number of these relations as it contemplates the various component parts of any individual animal in different ways—as it follows up different lines of thought.

These perceived relations, though subjective as *relations*, have nevertheless an objective foundation in real parts, or conditions of parts, of real wholes, and it is their correspondence with such objective foundations which gives to ideal relations whatever truth they may possess. To detect the most hidden laws of unity underlying the differences presented by animal structure, is the work of "Philosophical Anatomy."

Philosophical anatomists.

Speculative and creative minds, imbued with natural knowledge, have pursued with avidity this kind of inquiry. While more ordinary minds have been content with observing the facts of animal structure, the few have ever tried to solve the problems of the "how" and the "why."

An inquiry of this kind into the nature of the skeleton is the anatomical question, which has specially occupied Goethe, Oken, Spix, Carus, De Blainville, Geoffrey St. Hilaire, and Owen. It may not be uninteresting to consider whether the attempt to solve such problems is, as so many persons have come to believe, an altogether vain one; and if it does not appear to be a vain pursuit, then to inquire what is the nature of the answer which reason and observation combine to furnish.

The vertebral theory of the skull.

By a singular coincidence, the casual finding of the mutilated skull of a Ruminant helped to evolve, independently, from the minds of Goethe and of Oken, full and distinct conceptions of a new theory of the bony framework of the head. Each of these thinkers conceived the idea that the skull, instead of being (as had been universally supposed) an altogether peculiar structure, was in reality similar in composition to the backbone, or spinal column. The backbone is made up of a series of rings of bone mutually adjusted, called vertebræ. Goethe and Oken conceived that the skull was also made up of a series of vertebræ—much altered, however, as to size and shape, from those which form the spinal column. This idea, once emitted, was rapidly taken up by Oken's countrymen (as at later periods they have vehemently taken up the idea of Schwann and of Darwin); and Spix, Bojanus, and C. G. Carus further developed and modified the original idea. Nor did Oken's countrymen by any means stand alone; for De Blainville and Geoffrey St. Hilaire in France, and Goodsir, Maclise, and Owen in the British Isles, more or less accepted and modified, in different ways, the hypothesis propounded. Oken, indeed, at once pushed his speculation to extremes: expecting, on *à priori* grounds, to find the whole trunk, with its appendages, represented in the head. He was by no means content with assimilating the skull to the backbone, but insisted on finding the arms and legs, the hands and feet, even the fingers and toes, of the head; imagining that the last-mentioned members (fingers and toes) were represented by the teeth! Such a conception may be taken as a good example of those fanciful notions, before referred to, which, not being sustained by objective facts, are surely destined, as was this, to die out, and to disappear.

The vertebral theory of the skull, in an amended form, became advocated in England through Professor Owen, and anatomical science in this country will ever be very deeply indebted to him for his attempt to familiarise the English mind with "Philosophical Anatomy," since all must at least admit that it has been the occasion of an important scientific advance, through the efforts it occasioned to support, to modify, or to refute it. According to Professor Owen's hypothesis, the skull of every backboned animal, from man to the cod-fish, was really made up of four modified vertebræ, each being provided with an inferior arch, like those which in the trunk are formed by the ribs. The skeleton of every existing vertebrate animal was represented as being formed from some modification of an ideal archetypal skeleton, which was again represented as composed of a series of ideal archetypal vertebræ. This notion for a time met with very general acceptance, but was, ere long, attacked, as being inconsistent with the facts of development. It was said that if the skull was made up of modified vertebræ, its vertebrate character should be plainest in its earliest and least modified stages; and that yet such stages had no resemblance to vertebræ at all. Indeed, it was triumphantly shown that, as soon as the backbone begins to be a backbone, the skull begins to be something very different. In fact, that the skull is never segmented, as is the primitive vertebral column, but mainly consists, in its earlier stage, of a mass of cartilage, from which two cartilaginous rods (the *trabeculæ cranii*) extend forwards along the base of the brain-case, quite unlike anything found in the incipient vertebral column. Yet other suggestions were made by Professor Seeley and by Mr. Herbert Spencer, to account mechanically (by the necessary action of pressure and strains on a frequently flexed, elongated cylindrical body) for the simultaneous existence of a segmented backbone and a non-segmented skull. Finally, a flood of ridicule and sarcasm was poured on the vertebrate theory of the skull, and the doctrine of archetypal ideas was supposed to be once for all disposed of by means of the hypothesis of evolution. Mr. Darwin's 'Natural Selection' was lauded as having given the *coup de grâce* to such fancies; and, lastly, appeared 'Pangenesis,' to slay the slain, and to make fortuitous compounds of atoms occupy the vacant thrones of the deposed prototypal divine ideas. Evolution seemed to so many persons to have this destructive effect because, by and through it, similarities existing between the parts of different animals came to be represented as exclusively due to blood-relationship between them. It was no longer a wonder that the skulls of a monkey and a mud-fish were essentially similar, if both these animals were the diverging descendants of some ancient common ancestor.

Analogous and homologous parts.

A distinction had long been recognised, had been plainly put forth by Professor Owen, between parts which resembled each other in their function—*analogous* parts—and parts which resembled each other in their position with regard to neighbouring bodily structures —*homologous* parts. The wing of the humming-bird and the wing of the humming-bird hawk-moth are *analogous* parts—they perform the same function—as, in a less perfect degree, does the parachute of the little lizard (*Draco volans*). But the bones which sustain that parachute and the ribs of the humming-bird are *homologous* parts—i.e., they have similar relations of position to neighbouring bodily structures. The parachute-bones and the wing-bones, on the contrary, are *analogous* parts. Such facts of "homology" had been deemed deep mysteries. No *à priori* reason could be given why animals of the most different modes of life should have been formed on similar patterns. The man, the horse, the whale, and the bat, all have the pectoral limb—whether arm, fore-leg, paddle, or wing—formed on one type, diverse as are the uses to which these limbs are applied. Again, the butterfly and the shrimp, different as they are in appearance and mode of life, are constructed on one common plan, of which they exhibit diverging manifestations. These facts were recognised as facts, though no explanation of them could be offered. But they became readily explicable on the assumption of a blood-relationship, through actual generation and descent from common ancestors. Here, then, appeared to be the end of mystery with respect to homology—a ready, clear and sufficient explanation seemed to have been supplied. A new definition of homologous parts thus suggested itself.

They might be simply described as parts which resembled each other, because they were alike descended from one single part in a remote common ancestor.

Soon, however, investigation rendered necessary further analysis, with respect to parts said to be homologous.

Likenesses not due to inheritance.

It came to be recognised that there are likenesses between different animals and different parts of the same animal, which a theory of common descent cannot explain; and "similarity in relative position" had to be once more had recourse to, as a definition of what was meant by homology, such similarity being, in certain cases, explicable by "descent," and in others not so explicable.

A very obvious example of likeness not explicable by "descent" is the familiar one between our right hand and our left. This likeness is part of that general correspondence which exists between the right and left sides of most animals, and which is spoken of as "bilateral symmetry," or *lateral homology*. Another example is that likeness which sometimes exists between parts placed one above another, as between the upper and lower parts of the tail-fin of most fishes. Such likeness is an example of "vertical symmetry," or *vertical homology*. Another kind of "likeness," or homology, is termed "serial." It is chiefly in our limbs that this kind of homology is manifested externally in us, but it is plainly enough to be seen in the human skeleton (or in that of any backboned animal), in the ribs or in that series of generally similar bones (vertebræ) which make up the vertebral column or backbone. Our limbs, however, do present, even externally, a certain degree of similarity, the thigh, leg, and foot of the lower limb evidently more or less repeating the upper arm, arm, and hand of the upper limb.

Mr. Spencer's explanations.

Mr. Herbert Spencer, in his 'First Principles of Biology,' attempts to explain these and all facts of structure, not due to inheritance, by the action upon each organism of its environment. Thus he explains the very general absence of symmetry between the dorsal and ventral (upper and lower) surfaces of most animals by the different conditions to which these two surfaces are respectively exposed. But it may be objected that this is no real explanation, but a mere restatement of the facts. No reasons have been given by him showing either how or why each organism so responds to such external differences of environment, or how such differences in environment tend to produce such particular modifications. Mr. Spencer, indeed, beautifully illustrates that correlation which, however produced, all must admit to exist between the structure of organisms and their surrounding conditions, but he quite fails to show that such conditions are the *cause* of such structure. His argument is, indeed, an example of the old fallacy *post hoc ergo propter hoc.* I believe the cause to be not external but internal. If animals and plants respond so readily to the action of external incident forces, it must be the case that conditions exist in such animals and plants which dispose and enable them so to respond, according to the maxim, *Quicquid recipitur, recipitur ad modum recipientis,* as the same rays of light which bleach a piece of silk blacken nitrate of silver. If, therefore, we attribute the external forms of organisms to the action of external conditions, we but remove the difficulty a step back, since we must conceive an internal power and tendency occasioning such ready modifiability of structure. But, indeed, it is not at all easy to see how the influence of the surface of the ground, or any conceivable similar external condition or influence, can produce such differences as those existing between the dorsal and ventral shields of the shell of a tortoise.

The likenesses, then, which exist between arm and leg, and between hand and foot, are hardly to be explained by any mere action of the environment. But serial homology is much better exemplified in a very different group of animals from backboned creatures—namely, the group to which all insects, lobsters, centipedes, leeches, and earth-worms belong—the group of Annulose animals. In the centipede, the body (except at its two ends) consists of a longitudinal series of similar segments. Each segment supports a pair of limbs, and the appendages of all the segments (except at each end of the body) are completely alike. In most other creatures of the Annulose group, the fundamental similarity between the successive segments of which the body is composed is more or less disguised. Thus, for example, in the lobster a number of the anterior segments of the body are united together into one solid mass, while only in the abdomen (the so-called tail) do the segments remain distinct. The limbs also, which at first are all similar, assume, with the development of the young lobster, different forms and become respectively jaws, claws, legs, and swimming-feet. The peculiar and strongly marked serial homology of these Annulose animals has been the subject of an exceedingly ingenious suggestion by Mr. Herbert Spencer. In his work just referred to he has attempted to explain such serial homologies thus:—Some animals of a very low grade propagate themselves by spontaneous fission—one individual spontaneously dividing, and so becoming two distinct individuals. If certain creatures found benefit from this process of division remaining incomplete, they would (on the theory of Natural Selection) transmit to their posterity a naturally selected tendency to such incomplete division. It is conceivable that certain animals might thus have come to assume the form of a chain of similar segments—i.e., a chain of imperfectly separated individuals. Such a chain would, of course, in one kind of animal be the equivalent of a series of perfectly separated individuals of another kind of animal in which the process of fission was completely carried through. In other words, Mr. Spencer would explain the serial homology of Annulose animals by the supposed coalescence (through imperfect fission) of organisms of very simple structure, such as the small aquatic worms called *Planariæ*, in one aggregated, longitudinal series through the survival of the fittest aggregation. This is a very ingenious speculation, yet not only is there no evidence that *Planariæ* propagate by fission, but there is positive evidence which directly conflicts with Mr. Spencer's hypothesis. Mr. Mosely, in his investigations of the land *Planariæ* of India, has brought forward evidence that a single *Planaria* is the equivalent not of a segment of a leech but of a whole leech. Yet a leech is the morphological equivalent of a whole centipede, lobster, or other higher Annulose animal, and therefore each higher Annulose animal must be regarded as itself a morphological unit, and not an aggregation of such units.

Independent similarities.

Moreover, even lateral, vertical and serial homology do not exhaust the kinds of likeness (homologies) which have arisen independently of descent: for structures are continually being discovered (in animals of different kinds) so strikingly alike that their resemblance would naturally be taken, on the theory of evolution, for a sign of genetic affinity, and yet the circumstances under which they occur preclude any such explanation. The resemblance which exists between the ankle-bones of such widely different animals as frogs, and the small African lemurs, termed Galagos, may be taken as an example of such uninherited likeness. In a genus of the frog order (namely, *Pelobates*), and in the turtle, a bony expansion covers over that hollow at the side of the head which is called the "temporal fossa." A similar expansion has lately been found to exist in a certain African animal of the rat order (namely, *Lophiomys*), though it exists in no other known beast. The resemblance which exists between *Pelobates*, the turtle, and *Lophiomys* must be supposed to have been occasioned independently, and not by inheritance. Again, the African ant-eater, the aard-vark (*Orycteropus*), has each tooth, though apparently simple, really composed of a closely-set bundle of very fine, long, cylindrical teeth united together side by side. Such a structure exists in no other genus of the same class, but is found in the class of fishes—namely, in the skate (*Myliobatis*). Yet the aard-vark can have no special relation of genetic affinity with these fishes. The shape of the teeth in kangaroos is similar to that of certain shrew-like, insect-eating African beasts (of the genus *Macroscelides*), which also agree with kangaroos in having the hind-legs and feet much elongated and a jumping mode of progression; yet this double similarity is almost evidently induced and not inherited. The only beasts of burthen known in South America when it was discovered by the Spaniards, were the Llamas, animals which present a singular structure as to the course of their vertebral arteries which pierce the neck-bones on their inner sides. The very same condition, however, occurs again in the great ant-eater, also an inhabitant of South America. Yet it is impossible to believe that any special affinity, through descent, can connect such strangely divergent forms. It is also noteworthy that this character can hardly have been due to any action of "natural or sexual selection." The examples cited are but a few of many which might be adduced as evidence in this matter.

Homoplasts and homoplasy.

It is thus forced upon our attention (alike by the facts of lateral and serial homology, as well as by such as those just cited) that there *are* likenesses or homologies which *cannot* be due to inheritance, and which have to be distinguished from others which are, or which may be, so due. With the new mental conception came, as was fitting, the new oral expression. We have to thank Professor Ray Lankester for the introduction of the terms "homoplasy" and "homoplast," to express such uninherited resemblance and such resembling parts, as well as for the antithetical terms "homogeny" and "homogen," to express inherited resemblance and the parts which manifested it.

For my part, experience more and more convinces me that the number of similarities which have arisen independently (i.e., cases of homoplasy) is prodigious, as well as that very great caution is needed in endeavouring to discriminate between likenesses which may be due to inheritance, and those which are due to some other cause. The elaborate investigations of the first of our English embryologists (my friend Professor Parker), constantly make manifest the existence of an apparently inexhaustible number of complex cross relations between widely different animals, and show more and more plainly the entangled interdependencies of their structure. The notion, once popular with Evolutionists, that "similarity of structure" necessarily implies "genetic affinity," can certainly now be maintained, as a biological axiom, by no well-informed naturalist.

Indeed, the distinction between homogeny and homoplasy (between the influence of a common descent and that which produced independent similarity) has its importance much reduced through the power which the latter possesses of simulating the former. The degree to which homoplasy can rival homogeny in the degree of likeness produced, is shown, not only by the instances cited, but also by the likenesses existing between some of the bones of the skull in beasts and in osseous fishes. Probably but few naturalists would now dispute the independent origin of the bones of the skull in these two classes of animals. Yet their cranial bones are in many instances indisputably homologous, while in others their homology is a subject of keen discussion.

If it be asked what is meant by parts being "homologous," if they are not "homogenetic," it may be replied that it means they show a complex likeness, or agreement, as to their relative positions to other surrounding parts. This likeness, or agreement, may be of different kinds, according as we follow different lines of thought. An intellect of a higher order than that of man would probably detect an indefinite number of relations between two animals and between their component parts, which relations escape our observation altogether, though we can readily enough apprehend a considerable number of such relations.

Thus we may enumerate as examples of different kinds of homology:—

Catalogue of homologies.

1. Parts which have a similarity of function but differ structurally in their relations to all the rest of the body (i.e., differ in their relative position to the rest of the body)—e.g., the legs of a lizard and of a lobster.

2. Parts which are similar both as to function and relative position—e.g., the wings of a bat and of a bird.

3. Parts which, upon the hypothesis of evolution, are descendants of some ancient similar structure—e.g., the arm and leg bones of the horse and of the rhinoceros.

4. Parts which are similar as to their mode of origin in the individuals compared, whatever be their racial genetic relations—e.g., the occipital skull-bones of a panther and of a perch.

5. Parts which do not arise similarly in the individuals compared, whether or not they are the descendants of corresponding parts in some one common ancestral form—e.g., the legs of different kinds of fly—these insects differing strangely in their modes of attaining their adult structure.

6. Laterally homologous parts.

7. Vertically homologous parts.

8. Serially homologous parts.

(These last three kinds of homology have been already sufficiently explained.)

9. Parts of the same individual which have a certain likeness and correspondence though placed at opposite ends of the body—e.g., buccal and anal chambers.

10. Parts of one individual which repeat each other and which radiate from a central point—e.g., any two arms of a star-fish.

11. Parts which agree with each other as being successive subdivisions or segments of some part or organ—as of a limb or insect's feeling-organ (*antenna*)—and which are thus serial homologues of a subordinate kind, or subordinate serial homologues.

12. Parts of such subordinate serial homologues, which parts stand to each other in a secondary serial relation, as, for example, does the root segment of the leg of a lobster to the root segment of one of its swimming appendages.

13. Parts which stand to each other in a tertiary serial relation as being annexed to such subordinate serial homologues as stand to each other in a secondary serial relation.

14. Special homologues, which are parts existing in different animals, but belonging to the same *special skeletal cate-*

gory—as, e.g., the nail of a man's middle toe and the hoof of a horse's hind foot.

15. General homologues, which are parts belonging to the same *general skeletal category*—as, e.g., when we say of a part that it is a limb, or of another that it is a rib, or of a third that it is a vertebra. We may distinguish then different kinds and degrees of relationship, which are severally perceived according as the mind is directed along one line of inquiry or another, and whether concerning different individuals or different parts of the same individual.

Not due to the survival of the fittest.

Now I contend that it is against reason to suppose that mere indefinite variation, together with the "survival of the fittest," could ever have built up all these serial, lateral, and other homologues without the action of some innate power or tendency so to build up possessed by the organism itself in each case.

What can be more wonderful than the symmetry of those lowly but beautiful organisms, the *Acanthometræ*—a symmetry for which it is difficult to conceive any external cause. Hardly, if at all, less wonderful is the radial symmetry of the Echinoderms (the sea-stars, sea-eggs, and sea-urchins) with their multitudinous variety of component parts. If, then, internal forces can build up such varied structures as these, they may well be also capable of producing the various serial, lateral, and vertical symmetries which higher animals exhibit.

We may next consider whether there are not other external evidences (besides the homologues themselves) of the existence of such an internal power, by the action of which these recondite "likenesses" may be conceived to be brought about. It is here contended that there *is* good evidence of the existence of some such special internal power, which evidence may be gathered from three sources: 1, Comparative anatomy; 2, the science of monstrous births, or teratology; and 3, the science of diseased structures, or pathology.

First, as to comparative anatomy, one example may be selected where others can be easily adduced, if required.*

Evidences from comparative anatomy.

On the hypothesis of evolution, tortoises must be reckoned as very far indeed from being the first and earliest kinds of quadrupeds. Yet, certain tortoises exhibit the most extraordinary resemblance and correspondence between their anterior and posterior limbs. This degree of likeness and correspondence, then, must be the effect of a spontaneous development, and cannot be merely due to inheritance, because it does not exist in other forms which, upon evolutionary principles, are more nearly related to the hypothetical root-forms.

From teratology.

As to teratology, it is notorious that serially homologous parts tend to be similarly affected—great toes sharing abnormalities of structure with thumbs, and ankles with wrists, knees with elbows, and so on. Professor Burt Wilder has recorded six cases in which both the little fingers and both the little toes were similarly affected, and one case in which serial symmetry was alone exhibited, the right little finger and the right little toe being the only ones affected. But perhaps the most curious and instructive instances are those in which the feet of pigeons or fowls are abnormally feathered, or, as it is termed, furnished with "boots." These extra feathers are developed along the very parts of the foot which correspond to (i.e., are serially homologous with) those parts of the bird's hand which bear the wing-feathers, so that these "boots" are plainly a serial repetition of the true wing-feathers. These foot-feathers have, indeed, been sometimes proved to exceed the wing-feathers in length. Moreover, the foot-feathers resemble the true wing-feathers in structure, and are quite unlike the down which naturally clothes the legs of such birds as grouse and owls. But there is a more striking correspondence still, for in pigeons which are thus "booted" the two outer digits (toes) become more or less connected by skin, as is also the case with the corresponding digits of the pigeon's hand.

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* For others, see 'Genesis of Species,' chap. viii.

As regards pathology, Sir James Paget has declared, speaking of symmetrical diseases, that "a certain morbid change of structure on one side of the body is repeated in the exactly corresponding part of the opposite side"—i.e., we have a spontaneous manifestation of lateral homology. In the pelvis of a certain lion affected with a kind of rheumatism Sir James remarked a deposit which had formed a pattern more complex and irregular than the spots upon a map, while not one spot or line on one side failed to be represented with daguerreotype exactness on the other. He also considers that parts which are serially, as well as those which are laterally homologous, are likely to be affected in a similar manner. Such serially homologous parts are the back of the hand and the corresponding surface of the foot, and these are likely to be both modified in the same manner, as also are the palms and soles, the elbows and knees, together with the other serially corresponding parts of the arms and legs.

From pathology.

What explanation can be offered of these phenomena? To say that they exhibit a "nutritional relation," brought about by a "balancing of forces," is but a statement of the fact, and affords no explanation of it whatever. The changes are, *of course*, brought about by a "nutritional" process, and the symmetry is undoubtedly the result of a "balance of forces;" but to say so is to affirm a truism. The question is, what is the cause of this "nutritional balancing?" It seems impossible not to concede the existence of an internal force. If this power be referred, as it seems Mr. Spencer would refer it, to certain physiological units of which he imagines each organism to be composed, there must none the less be recognised an innate power possessed by such units of inheriting the effects of ancestral modification. It is not easy to see the advantage of Mr. Spencer's reference. It seems easier, simpler, and more consonant with known facts, to recognise in each organism as a whole (which is visibly a unity) an innate power, tending to development of a special kind, though the actual results of the developing force must be modified by the external conditions which happen to exist in each case during the process of development.

Amongst the results of the recognition of such innate powers and tendencies are an increased support to Teleology and a rehabilitation of "Philosophical Anatomy." With such recognition, indeed, it is much less difficult than without it, to conceive (if "purpose" in nature be recognised at all) that results which become manifest only at last, and after complex changes which do not seem to foreshadow them, may have been latent and pre-ordained from the first.

Teleology.

When "Philosophical Anatomy" fell in general esteem, in the manner already related, it did not fall alone. Teleology, or the doctrine of final causes, had been a favourite subject with Professor Owen; and with Teleology, the doctrine of evolution appeared to many to wage a battle *à outrance.* It was not that this or that explanation was disputed; but the whole conception fell into utter disesteem, and the "purposelessness" of the organic world became with some persons almost an article of faith, as it has come to form a special branch of study, with its proper scientific title of "dysteleology."

This materialistic and atheistic spirit of negation has been, however, modified, and seems destined to be more affected hereafter, by that very study which at first came so aptly to its aid.

The further prosecution of embryological research, so fatal to "Philosophical Anatomy" in its earlier form, is calculated to have this anti-materialistic effect. The mazy complexity of developmental changes, the half-revealed affinities, thus seen to radiate in all directions, have convinced more than one of our most eminent observers that no series of haphazard changes is thus offered to their ken, but that they have before them the evidences of an orderly and predetermined evolution. One such observer, at least, has been thus turned from crass materialism, if not to theism, yet to the belief in a Pantheistic Demiurge ever weaving Protean matter into structures, the cross relations and affinities of which are too complex for the sharpest of human observers to unravel. Thus, time has brought about strange changes.

"Jam redit et Virgo, redeunt Saturnia regna."

A resurrection.

From the same professorial chair whence Professor Owen, in 1849, promulgated his views as to "Philosophical Anatomy," Professor Huxley, in 1870, gave out in turn his quasi-vertebral theory of the skull, followed four years later by Professor Parker. Moreover, Professor Huxley has not only eloquently proclaimed the complete compatibility of "Teleology" with "Evolutionism," but even the utter impotence of the latter to weaken, in however small a degree, the position of the teleologist. If such results are admitted by those who are at once zealous evolutionists and eminent advocates of the supreme importance of the study of development, they may well be yet more apparent to those who, on principle, deny that the study of development is the one key whereby may be unlocked the mysteries of animal organization. Useful, highly useful in its degree, as is the study of development, its importance seems to me to have been of late somewhat overestimated. For, in the first place, it is manifest that if our embryological researches be carried back as far as possible, we shall not find in the incipient germ any available characters at all, while at later stages diversities in the interpretation of nascent structures are almost always possible. In backboned animals, when the skull begins to assume the consistence of cartilage, the meaning of the initial changes of that process must be elucidated through the changes which take place at subsequent stages. Thus Professor Huxley has lately* testified, referring to the development of

Development.

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* See 'Proceedings of the Zoological Society,' for 1874, Part ii. p. 193.

the skull of the American gilled eft, ***Menobranchus***, that, in his opinion, "No definite answer can be given" to the question whether the trabeculæ "grow into adjacent tissues, as a tree pushes its roots into the soil," or whether their apparent extension does not "arise rather from a chondrification of the pre-existing tissue in the immediate neighbourhood of the trabecular cartilage?"

Secondly, when ossification begins to set in, the meaning of the several ossific centres as they arise must be interpreted by their later stages, or subsequent adult conditions in the same animal or in other animals. How else could epiphyses ever be discriminated from other ossific centres? Again, the circumstance of a bone or cartilage making its appearance as a single element may in any case be due to the junction of its incipiently distinct parts at a period anterior to possible observation; in other words, it may be made up of parts which are called *connate*—i.e., never distinct to observation, though judged from analogy to be essentially compound. Of such rationally inferred, but invisible, distinctness, botany offers us a multitude of examples.

The stages passed through by the larvæ of moths and butterflies throw but a doubtful light on their adult condition; and what misleading ideas might not be suggested by the development of the Sitaris beetle? This insect, instead of at first appearing in its grub stage, and then after a time putting on the adult form, is at first active and furnished with six legs, two long antennæ, and four eyes. Hatched in the nests of bees, it at first attaches itself to one of the males, and then crawls, when an opportunity offers, upon a female bee. When the female bee lays her eggs, the young Sitaris springs upon them and devours them. Then, losing its eyes, legs, and antennæ, it sinks into an ordinary grub-like form, and feeds on honey, ultimately undergoing another transformation, re-acquiring its legs and antennæ, and emerging a perfect beetle.

Surely the results of development are as much to be considered as are its earlier stages. I am far indeed from denying that the study of embryology is of great importance, that the investigation as to "how things become" is a most interesting and valuable inquiry; but I deny that it is all-important.* Aristotle declares the essence of a thing to be "what it is to be," and the outcome of development is, to our mind, *the* important matter. If the apes of the old world and of the new have descended from radically different stocks, are they on that account not to be classed together as apes? If it turns out that birds have come, not from one but several distinct reptilian sources, are they not all as much "birds" for all such divergence in origin?

My view as to each organism is, that it is, dynamically considered, a single form or force, which the human mind is unable to thoroughly comprehend and appreciate. Partial apprehensions of it are to be obtained by different modes of study and contemplation—one such mode being the study of the development of such organism.. But a synthesis of all our modes of study is the necessary preliminary to our obtaining the least imperfect apprehension which is possible for us of any animal or plant. We cannot grasp it in its totality and unity—in its essence—we can only comprehend it approximatively, as we approach it, intellectually, on as many different sides as we can, and as nearly as we can.

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* The wide-spread tendency now existing to sacrifice other and more important considerations, to considerations as to origin, is noted by Mr. Morley, in his work on 'Compromise,' 1874. He tells us (p. 23): "Curiosity with reference to origins, is for various reasons the most marked element among modern scientific tendencies. . . . . Character is considered less with reference to its absolute qualities, than as an interesting scene, strewn with scattered rudiments, survivals, inherited predispositions. Opinions are counted rather as phenomena to be explained than as matters of truth or falsehood. Of usages we are beginning, first of all, to think where they came from, and secondarily, whether they are the most fitting and convenient that men could be got to accept. In the last century, men asked of a belief or a story, Is it true? We now ask, How did men come to take it for true? In short, the relations among social phenomena which now engage most attention, are relations of original source, rather than those of actual consistency in theory, and actual fitness in practice. The devotees of the current method are more concerned with the pedigree and genealogical connections of an idea, than with its own proper goodness or badness, its strength or its weakness." The author goes on to show, from his point of view, some of the evils attendant on this method, such as "its tendency, if uncorrected, to make men shrink from importing anything like absolute quality into their propositions," and "to place individual robustness and initiative in the light of superfluities with which a world that goes by evolution can very well dispense."

To return to the question of the vertebral or non-vertebral nature of the skull: the result of all the controversy on the subject up to the present time is that such vertebral nature may be affirmed in one sense and denied in another, according to the line of thought which is followed.

Are there cranial vertebræ?

The whole body of every animal with a distinct skull and backbone exists at first as a rounded, almost structureless mass of tissue, in which the first clear indication of such animal is a longitudinal furrow marking the place of the future spinal marrow and brain. Beneath this furrow, a rod made up of cells (the *chorda dorsalis*) comes to lay the foundation of the future spinal column. From each side of the groove a fold extends upwards, the two folds being called the *laminæ dorsales*, and these folds, meeting together above, form a canal. It is within that part of the *laminæ dorsales* which form the spine, that first the cartilages and then the bones are developed which form the sides of the vertebral arches. Similarly, it is within that part of the *laminæ dorsales* which form the skull that first the cartilages and then the bones are developed which form the sides of the skull arches, and thus there is an undeniable similarity between these two parts. Moreover, in subsequent development, the bones of the skull—especially in the *higher animals*—present a singular reminiscence of vertebræ in the three serially successive arches which they form. Certainly, if the essence of vertebræ consists in their being a series of bony rings fitted together, and enclosing the nervous centres along the dorsal region of the frame, then it must be asserted that the skull is in part composed of three bony vertebræ.

In certain fishes the transition from the *spinal column* to the *skull* is so gradual that it is easy to mistake part of that column for part of the skull. Thus, in the sturgeon, the cartilaginous representatives of true vertebræ coalesce into one mass with the cartilaginous skull; and in the Siluroid fish *Bagrus* the bony vertebræ next the head are greatly expanded, and join each other by the same mode of union (by suture) as do true cranial bones; and this shows how undoubted vertebræ may simulate cranial walls.

There are, however, various elements which enter into the composition of the brain-case (or skull) which do not enter into that of the spinal-marrow-case (or vertebral column), and there are differences as to development; but, after all, the existence of a remarkable secondary and induced resemblance between these skeletal parts is undeniable.

As to development, it has always been affirmed that while the spinal column is essentially, and in almost its earliest stages, a serially segmented structure, the primitive skull presents no serial segmentation. It is indeed true that parts which temporarily or permanently represent in cartilage the bony skull are never serially segmented; and more than this, the cartilaginous precursors of the bones on one side may be completely separated by an interspace of softer substance from their fellows of the opposite side—a single fore-and-aft segmentation in the skull thus violently contrasting with the manifold transverse segmentation of the spine. But a most interesting point has lately been noticed*—namely, that in the young eft and Axolotl, before the base of the future skull has become cartilaginous, an indication of transverse segmentation is to be traced in the soft tissue of that region—a proof of what oversights may be committed by relying too hastily on development as our guide. The continuous chondrification of the base of the skull before observed had led to a denial of all fundamental transverse segmentation of that region by the opponents of the vertebral theory of the skull, while the assertors of that theory regarded such continuity as an induced and adaptive masking of a segmentation, visible to the eye of the intellect, though not to that of the sense. The latter view now turns

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* See the Paper before referred to, 'Proc. Zool. Soc.' 1874, p. 196, pl. xxxi. figs. 1 and 2.

out to have been the right one; and a latent tendency speculatively divined has now been made palpably evident. How many other latent tendencies may not exist which never render themselves visible! Might it not be contended that the ultimate segmentation of the bony cranium of mammals is one mode of expression, disguised and highly modified, of such latent earliest tendency to serial segmentation?

Amphioxus.

But most striking of all recent phenomena concerning the vertebral archetype is the return just made by Professor Huxley * to the conception so long ago advocated by Professor Owen, that serial segmentation, however latent and disguised, extended primitively and fundamentally to quite the anterior end of the head. The first-named Professor here advocates the view that we have an approximation to the early form of the vertebrate skull in that very exceptional little fish the Lancelet (*Amphioxus*), in which the front end of the body is, like all the rest of it, made up of a series of similar segments, although the part representing the bodies of the vertebræ of higher animals is itself unsegmented. The general resemblance of the new concrete type of Professor Huxley to the old type, as exhibited in the well-known plate of Professor Owen's book on the Archetype of the Vertebrate Skeleton, is striking enough.

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* See 'Proceedings of the Royal Society,' No. 157, p. 127. The author's determination of the homologies he seeks to establish, rests upon the constancy of position of the *velum palati* which he has selected as his fixed point. A certain hesitation in assenting to the new view may be justified by the absence (as far as yet known) of the auditory organ in the Amphioxus. If there is one thing which is constant in the vertebrata it is the auditory capsule, and the figures on the Paper referred to show it relatively largest in the youngest condition of the Ammocœtes chosen for comparison. The distribution of the cranial nerves can hardly be said to afford decisive characters, since as there *are* myotomes, if nerves are supplied to them laterally from a central nervous trunk, each nerve must divide into a dorsal and a ventral branch to supply each muscular segment. Similarly nervous supply must be sent to the front end of the body; and if the so-called eye-spot of Amphioxus be an eye-spot, the circumstance that this nerve passes over it, though a striking fact, is scarcely sufficient to identify it with the ophthalmic division of the fifth nerve of fishes and higher vertebrates.

The constantly increasing number of instances of the independent origin of similar structures makes us think it far from impossible that vertebrate genetic affinity may lie at least as much in the direction of the annelid worms as in that of the ascidians, and that there are hardly as yet data to determine which of the curious cross relationships exhibited by the Lancelet, are due to genetic affinity, and which to homoplasy.

It is none the less true that there are profound differences between the two conceptions. According to the recently put forth view, the skull of the higher vertebrates is really made up of something less than twenty segments, each of which has a morphological value equivalent to a spinal vertebra with its annexed parts. Again, the recent conception does not repose upon a speculative basis, but presents us with a concrete type instead of an abstract ideal. And yet even the concrete Amphioxus must be idealised to serve as the type of vertebrate structure, since though its body is segmented as a whole, the central part of the spinal column is not segmented, but presents, like the embryos of the higher animals, a continuous *chorda dorsalis.*

The answer.

The conception of cranial vertebræ, then, like conceptions of serial, bilateral, special, and general homology, all forming parts of "Philosophical Anatomy," are subjective apprehensions of relations which have an objective existence in nature. Such conceptions are similar to our conceptions of "types," the very name of which is distasteful to so many. It is true that types, *as types,* are not real objective entities. But though, as types, they are ideal, they have none the less a basis in reality. The fact that they have no complete concrete being as types, is no more a reason for refusing to recognise their existence than is the non-existence objectively of species, *as species,* a reason for refusing to recognise *the individual realisation* of a species or to make use of zoological and botanical specific names. The acceptance of the theory of evolution forms no bar to the reception of that view which represents all organic forms as having been created according to certain fixed ideal types. The two beliefs, far from being reciprocally exclusive, can and do co-exist in perfect harmony in one and the same individual mind.

But have the conceptions of philosophical anatomy any other existence besides that subjective existence in the human mind, and that objective foundation in the natural world, neither of which can be denied? The answer to this must depend upon the philosophical system of him who answers the question, and especially on his acceptance of and his mode of conceiving a first cause.

A deeper question.

The teaching of what I regard as true philosophy is, that the types shadowed forth to our intellects by material existences, are copies of divine originals, and respond to prototypal ideas in God. Those who deny the existence of God, or who deny that we can know anything as to such existence, may, of course, consistently enough deny or doubt the existence of such prototypal ideas. On the other hand, the teaching referred to has been ridiculed as if the maintainers of it must necessarily either pretend to possess some far-reaching intellectual power not shared by most naturalists, or else assert that the very natural phenomena were themselves sufficient to make manifest such transcendent conceptions. But, in fact, the acceptance of such prototypal ideas follows as a consequence, not upon the investigation of irrational nature considered by itself, but upon its investigation considered as a portion of one great whole, of which the human mind, endowed with intelligence and free-will, forms a part, and which is consequently to be viewed as the creation of God. Let the idea of God be once accepted, and then it becomes simply a truism to say that the mind of the Deity contains all that exists in the human mind, and infinitely more. Thus it is that such human conceptions, gathered from nature, must, so considered, be asserted to be ideas in the divine mind also, just as every separate individual that has been, is, or shall be, is present to the same mind. Nay, more, such human conceptions can be but faint and obscure adumbrations of corresponding ideas which must exist in perfection and in fulness in the mind of God.

We have seen that even by viewing organisms from all the points of view possible to us, we can but attain to a very imperfect comprehension of such organisms. But the wider and wider generalizations of broader and better-informed minds continually advance our power of comprehension. All then who admit that the natural world is the product of a divine mind must also admit, since such mind is infinitely above all human minds, that it possesses in perfection what the most perfectly developed human minds possess, as it were, in germ.

Thus viewed, the questions of philosophical anatomy acquire a fresh value, and it becomes plain that we owe a debt of gratitude to those who, years ago, forced questions such as these upon willing and unwilling ears. Not less plain is the justification which the most modern views afford them. Platonic and Peripatetic conceptions are far indeed from having been overthrown by the rising tide of a revived Ionian philosophy—a flood of which has slightly covered part of our land, and deeply submerged Germany. Philosophical anatomy, types, divine prototypal ideas are one by one emerging and reappearing, refreshed and invigorated by the bath of Darwinian Evolutionism through which they have been made to pass. It is again becoming manifest that nature, when broadly surveyed, confirms and accords with the speculations of philosophy, though never without a certain want of minute agreement; so opening fresh vistas which invite the intellect to further advance and to the solution of more and more recondite problems which it is the task of philosophical anatomy perpetually to strive after, to elucidate in part, but never, in this life, exhaustively to solve.

Homology reveals internal forces.

The existence, then, of these various homologies, serial, lateral, &c., render it plain to any one who ponders over them that there is in each individual animal a peculiar form or energy which actually results in the complex phenomena above described. And just as species and genera do not exist as species and genera except mentally, and yet really exist objectively in those individual characteristics which furnish specific and generic characters; just so the peculiar force referred to may be spoken of as that of the species, though of course it has no existence really except in the organic activities of the individuals which compose such species. To adopt, for illustration, the mode of speech now current respecting force and its so-called "transformations," it may be said that the cosmical forces of all kinds unite and "transform" themselves in each living creature into a single force which, regarded abstractedly, may be said to be the dynamical side of such creature.

Or "soul" in each animal.

If we use the mode of speech of an older philosophy, we may say that the active powers of the cosmos exercising themselves upon matter in a duly prepared condition, evolve from a latent potential state, into active, temporary existence, a peculiar active power, the "soul" of an individual animal or plant, which endures as long as and no longer than the corporeal frame of the organism preserves its due integrity, that integrity and that activity necessarily arising, co-existing, varying and disappearing together, like the convexities and concavities of a vessel of blown glass. It has been urged in the preceding chapter that the body of each living animal is really a unity, a continuum, one living whole. Congruous with this conception is the belief that the active force of each living animal is really a unity, one indivisible whole—that it is not a plexus of different forces temporarily aggregated, but a single form of force resulting for a time from the play of all other forces, and destined to disappear when, simultaneously with such disappearance, the active powers of the various substances into which the animal's body decomposes show themselves again as the various chemical and other physical forces which are the activities of the substances into which the body dissolves.

Mr. Lewes.

The reasonableness of this view is corroborated by some excellent remarks made by Mr. Lewes on a kindred subject. It is commonly asserted that substances such as oxygen and hydrogen in water really persist, though seeming to have disappeared, and their reappearance on the dissolution of water is held to be a proof of their never having ceased to exist. This view (which Mr. Lewes disputes) may be said to be a parallel view to that which represents an apparently single force (a living animal) to be not what it appears to be, but, instead, a mere plexus of physical forces.

And this latter view may be disputed by considerations similar to those put forward by Mr. Lewes. That writer says:*—

> "What is the plain inference from sensible experience? It is that both oxygen and hydrogen have in combination lost all their specific qualities, and have acquired new qualities. They have not only lost that amount of molecular agitation which kept them in their gaseous state, they have lost those qualities, or modes of reaction, which distinguished them from other gases and solids. The oxygen will not now oxidize, the hydrogen will not flame. If this is not destruction, destruction has no meaning; if this is not change, nothing is changeable. Theory declares that the oxygen has not changed; and fact declares that the oxygen has utterly changed. Theory infers that oxygen is indestructible, in spite of the fact that oxygen has been destroyed. . . . The surprising recovery of all the original characters, after the element has undergone a multiplicity of changes destructive of those characters, is supposed to prove that what is thus recovered could not have been lost. Hence the conclusion is drawn that throughout its apparent changes the element has really preserved its integrity. But looked at closely it is seen that all which remains the same is the possibility of restoration . . . . that what is now lost will reappear whenever the requisite conditions of its appearance are restored. The house will reappear when the bricks are re-arranged."

This is, once more, exactly the scholastic philosophy; form or force passes from the active condition ("in actu") to the condition of possibility ("in potentia") to re-emerge in act, simultaneously with the acquisition by matter of the condition proximate for its manifestation.

Conclusion.

We may here shortly survey the ground we have as yet traversed. The course we have already pursued has shown us that in each of us there energizes a force which feels, thinks, remembers and wills—that expresses its thoughts by external signs, can perceive amongst its perceptions moral worth, and is essentially the same in all men. Secondly, we have recognised that outside us really exists an external world, part of which consists of individual, active wholes—concrete unities, which live (as all plants), or which live and feel (as the dog and the bee), or which live, feel, and also think (as man). We have also seen that the force which energizes in each such irrational sentient being is one (as that which we know acting in ourselves is one)—a true unity, which manifests itself besides feeling, in organic activity (growth, development, and instinct), giving evidence to the intellect of rational man of deep and mysterious powers and tendencies (expressed by us as the different kinds of homology and homoplasy as well as mimicry), and revealing to the contemplative mind which has risen to the recognition of a First Cause the existence of Divine prototypal ideas, capable indeed of being but very imperfectly apprehended by us, yet existing as the seminal principles of that teeming world of animals and plants which affords so vast and inexhaustible a field for the exercise of our delight and admiration as well as of our observing and reasoning energies.

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* 'Problems of Life and Mind,' vol. ii. p. 55.

CHAPTER IX.

NATURAL SELECTION.

"The hypothesis of natural selection originally put forward as the origin of species has been really abandoned by Mr. Darwin himself, and is untenable. It is a misleading positive term denoting negative effects, and as made use of by those who would attribute to it the origin of Man, is an irrational conception."

Futility of attempts to ignore internal forces.

At the close of the preceding chapter, the outcome was glanced at of those lessons which had already been gathered from nature. They were recognised as teaching that there exists in each animal and plant a unity of force corresponding with its unity of frame, each living organism manifesting, by unmistakable external signs, the presence of such internal power the mysterious nature of which it was sought to bring home by a consideration of those deep-lying tendencies revealed in the facts of serial and other homology.

This notion of an "internal force" is very repugnant to some contemporary writers. But it is absolutely impossible to get rid of the idea of innate powers and tendencies the existence of which is everywhere manifested, not only in the organic world but in the inorganic world also. To conceive the universe as consisting of atoms acted on by external forces but having in themselves no power of coherence or response to such external actions, is a manifest absurdity. No one thing can act on any other, except that in such other there is an innate capacity of being acted on. Mr. Herbert Spencer conceives each animal as being built up of a multitude of "physiological units," each of which is credited with "an innate tendency" to evolve the parent form from which it sprang. Mr. Darwin conceives each animal and plant to be built up of a number of "gemmules," each gemmule being the seat of powers, special tendencies and elective affinities of a most complex kind. In fact, as Mr. Lewes says, we have thus "the very power which was pronounced mysterious in larger organisms." It seems, as before said, simpler and far more natural to regard each animal as the seat of one governing force than as itself made up of a number of living creatures so minute as to be invisible to the highest power of the microscope, and each animated by a governing force of its own. Surely this is to multiply difficulties of conception against both sense and reason alike.

Origin of species, the author's view.

The great question as to how the different kinds of animals and plants which now people this planet first arose has been answered at various times in various ways. My own view has been expressed as follows:*—

> "It is quite conceivable that the material organic world may be so constituted that the simultaneous action upon it of all known forces, mechanical, physical, chemical, magnetic, terrestrial, and cosmical, together with other as yet unknown forces—which probably exist, may result in changes which are harmonious and symmetrical; just as the internal nature of vibrating plates causes particles of sand scattered over them to assume definite and symmetrical figures when made to oscillate in different ways by the bow of a violin being drawn along their edges. The results of these combined internal powers and external influences might be represented under the symbols of complex series of vibrations (analogous to those of sound or light) forming a most complex harmony or a display of most varied colours. In such a way the reparation of local injuries might be symbolized as a filling-up and completion of an interrupted rhythm. Thus also monstrous aberrations from typical structure might correspond to a discord, and sterility from crossing be compared with the darkness resulting from the interference of waves of light.
>
> "Such symbolism will harmonize with the peculiar reproduction, before mentioned, of heads in the body of certain annelids, with the facts of serial homology, as well as those of bilateral and vertical symmetry. Also, as the atoms of a resonant body may be made to give out sound by the juxtaposition of a vibrating tuning-fork, so it is con-

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* 'Genesis of Species,' 2nd edition, p. 261.

> ceivable that the physiological units of a living organism may be so influenced by surrounding conditions (organic and other) that the accumulation of these conditions may upset the previous rhythm of such units, producing modifications in them—a fresh chord in the harmony of nature—a new species!"

For the arguments by which this view is supported and antagonistic hypotheses contested, the reader is referred to the work from which the passage just quoted has been taken. Here it can be only incidentally defended, yet one passing remark may be now made. That characters of importance suddenly appearing are not really unlikely to persist, is confirmed by an observation made by Mr. Darwin himself, who tells us (in his 'Descent of Man,' vol. i. p. 233): "When any character has suddenly appeared in a race or species as the result of a single act of variation . . . . and this race is crossed with another not thus characterized, the characters in question do not commonly appear in a blended condition in the young, but are transmitted to them either perfectly developed or not at all."

The view of specific genesis which I support, though arrived at in complete independence, is more or less similar to that enunciated fifteen years ago by Professor Theophilus Parsons, of Harvard University in the United States. It also agrees in many respects with the views advocated by Professor Owen in the last volume of the 'Anatomy of Vertebrates,' under the term "derivation." He there says: "Derivation holds that every species changes in time, by virtue of inherent tendencies thereto."

Mr. Darwin's original view.

Mr. Darwin, as every one knows, has attempted to account for the appearance of new forms of animals and plants by a certain special process called by him "Natural Selection;" an hypothesis which may be thus shortly stated:—

Every organism tends to multiply geometrically and to transmit a general likeness, with individual differences, to its offspring. No two individuals are quite alike. Past time is practically infinite. Each individual which survives to breed does so through circumstances which favour him by enabling him to escape the destructive agencies of nature. Thus happy variations cause survival and transmission, and thus new species result from survival of which are the fittest to live, as shown by the event. The title of his well-known book is: 'On the Origin of Species by Means of Natural Selection.' This is equally the title of the last edition as of the first, and the words "*by means of*" appear in each case. At the end of the Introduction of the first edition he says: "I am convinced that natural selection has been the main, but not the exclusive means of modification." In the last edition he says: "I am convinced that natural selection has been the most important, but not the exclusive means of modification." Before the appearance of the last edition, however, Mr. Darwin published his 'Descent of Man;' and a consideration of this last work in conjunction with his 'Origin of Species' will afford the best means of considering his whole position. It can by such a proceeding be seen what, if any, modifications have taken place in his views, and the value of his judgment may, it is obvious, be most fairly estimated by examining his own declarations with respect to his earlier beliefs and assertions.

Our attention, then, may first be directed to his earlier statements, in order that we may see whether he has modified his views, and, if so, how far and with what results. If he has, even by his own showing and admission, been over-hasty and seriously mistaken previously, we must be the more careful how we commit ourselves to his guidance now. It is here contended that Mr. Darwin's convictions have undergone grave modifications, and that the opinions adopted by him now are quite distinct from, and even subversive of, the views he originally put forth. The assignment of the law of "natural selection" to a subordinate position is virtually an abandonment of the Darwinian theory; for the one distinguishing feature of that theory was the "most important" or "main" position assigned to "natural selection." Not the less, however, may we thank Mr. Darwin for bringing forward that theory, and for forcing on men's minds a recognition of the probability, if not more, of evolution and of the certainty of the action of "natural selection." For though the "survival of the fittest" is a truth which readily presents itself to any one who considers the subject; and though its converse, the destruction of the least fit, was recognised thousands of years ago, yet to Mr. Darwin, and (through Mr. Wallace's reticence) to Mr. Darwin alone, is due the credit of having first brought it prominently forward and demonstrated its truth in a volume which will doubtless form a landmark in the domain of zoological science.

We find even in the third edition of his 'Origin of Species' the following passages: "Natural selection can act only by taking advantage of slight successive variations; she can never take a leap, but must advance by short and slow stages" (p. 214). Again he says: "If it could be demonstrated that any complex organ existed which could not possibly have been formed by numerous, successive, slight modifications, my theory would absolutely break down. But I can find out no such case" (p. 208). He adds:—

> "Every detail of structure in every living creature (making some little allowance for the direct action of physical conditions) may be viewed, either as having been of special use to some ancestral form, or as being now of special use to the descendants of this form—either directly, or indirectly through the complex laws of growth;" "and if it could be proved that any structure of any one species had been formed for the exclusive good of another species, it would annihilate my theory, for such could not have been produced through natural selection."

And the words last cited occur on page 162 of his very last edition.

It is almost impossible for Mr. Darwin to have used words by which more thoroughly to stake the whole of his theory on the non-existence or non-action of causes equal in efficiency to natural selection. For why should such a phenomenon "annihilate his theory?" Because the very essence of his theory, as at first stated, is to recognise only the conservation of minute variations directly beneficial to the creature presenting them, by enabling it to obtain food, escape enemies, and propagate its kind. But once more he says:—

> "We have seen that species at any one period are not indefinitely variable, and are not linked together by a multitude of intermediate gradations, partly because the process of natural selection will always be very slow, and will act, at any one time, only on a very few forms; and partly because the very process of natural selection almost implies the continual supplanting and extinction of preceding and intermediate gradations."—p. 223.

Such are Mr. Darwin's earlier statements. At present we read as follows:—

His later views

> "I now admit, after reading the essay by Nägeli on plants, and the remarks by various authors with respect to animals, more especially those recently made by Professor Broca, that in the earlier editions of my 'Origin of Species' I probably attributed too much to the action of natural selection or the survival of the fittest. . . . . I had not formerly sufficiently considered the existence of many structures which appear to be, as far as we can judge, neither beneficial nor injurious; and this I believe to be one of the greatest oversights as yet detected in my work."—*Descent of Man*, vol. i. p. 152.

A still more remarkable admission is that in which he says of the causes of change in organisms:—

> "We can only say they relate much more closely to the *constitution* of the varying organism, than to the nature of the conditions to which it has been subjected. An unexplained residuum of change, perhaps a large one, must be left to the assumed action of those *unknown agencies*, which occasionally induce strongly marked and abrupt deviations of structure in our domestic productions."—vol. i. p. 154.

But perhaps the most glaring contradiction is presented by the following passage:—

> "No doubt man, as well as every other animal, presents structures which, as far as we can judge with our little knowledge, are not now of any service to him, nor have been so during any former period of his existence, either in relation to his general conditions of life, or of one sex to the other. Such structures cannot be accounted for by *any form of selection*, or by the inherited effects of the use and disuse of parts. We know, however, that many strange and strongly marked peculiarities of structure occasionally appear in our domesticated productions; and if the unknown causes which produce them were to act

more uniformly, they would probably become common to all the individuals of the species."—vol. ii. p. 387.

Mr. Darwin, indeed, seems now to admit the existence of internal, innate powers, for he goes on to say:—

> "We may hope hereafter to understand something about the causes of such occasional modifications, especially through the study of monstrosities. . . . . In the greater number of cases we can only say that the cause of each slight variation and of each monstrosity lies much more *in the nature or constitution of the organism* than in the nature of the surrounding conditions; though new and changed conditions certainly play an important part in exciting organic changes of all kinds."

Mr. Darwin even admits the existence of different innate laws in different species. He says (vol. ii. p. 177), "That the degree of limitation should *differ* in *different species* of the same group will not surprise any one who has studied the laws of inheritance, for they are so complex that they appear to us in our ignorance to be capricious in their action."

He also says, as to the disappearance of juvenile stripes and markings in adult pigs and tapirs: "But whether this change was effected through sexual or natural selection, or was due to the direct action of the conditions of life or *some other unknown cause*, it is impossible to decide."

Also, in a note (vol. i. p. 223), he speaks of "incidental results of certain unknown differences in the constitution of the reproductive system."

Thus, then, it is admitted by our author that we may have "abrupt, strongly marked" changes, "neither beneficial nor injurious" to the creatures possessing them, produced "by unknown agencies" lying deep in "the nature or constitution of the organism," and which, if acting uniformly, would "probably" modify similarly "all the individuals of a species." If this is not an abandonment of "natural selection," it would be difficult to find terms more calculated to express it. But Mr. Darwin's admissions of error do not stop here. In the fifth edition of his 'Origin of Species' (p. 104) he says, "Until reading an article in the 'North British Review' (1867), I did not appreciate how rarely single variations, whether slight or strongly marked, could be perpetuated." Again: he was formerly "inclined to lay much stress on the principle of protection, as accounting for the less bright colours of female birds" ('Descent of Man,' vol. i. p. 198); but now he speaks as if the correctness of his old conception of such colours being due to protection was unlikely. "Is it probable," he asks, "that the head of the female chaffinch, the crimson on the breast of the female bullfinch, the green of the female chaffinch, the crest of the female golden-crested wren, have all been rendered less bright by the slow process of selection for the sake of protection? *I cannot think so*" [the italics are mine]. (Vol. ii. p. 176.)

and admitted errors.

Once more Mr. Darwin shows us (vol. i. p. 125) how he has been over-hasty in attributing the development of certain structures to reversion. He remarks, "In my 'Variations of Animals under Domestication' (vol. ii. p. 57) I attributed the not very rare cases of supernumerary mammæ in women to reversion." "But Professor Preyer states that *mammæ erraticæ* have been known to occur on the back; so that the force of my argument is greatly weakened or perhaps quite destroyed."

Finally, we have a postscript in the second volume of the Descent of Man' which contains an avowal more remarkable than even what has been cited. He therein declares:—

> "I have fallen into serious and unfortunate error, in relation to the sexual differences of animals, in attempting to explain what seemed to me a singular coincidence in the late period of life at which the necessary variations have arisen in many cases, and the late period at which sexual selection acts. The explanation given is wholly erroneous, as I have discovered by working out an illustration in figures."

It would be idle to dissemble, and disingenuous not to declare, the amount of distrust with which such repeated over-hasty conclusions and erroneous calculations should properly inspire his readers. When then

Consequent need of careful criticism.

Mr. Darwin comes before them anew (as he does in his 'Descent of Man'), with opinions and conclusions still more startling, and calculated, in a yet greater degree, to disturb convictions reposing upon the general consent of the majority of cultivated men, we may well pause before we trust ourselves unreservedly to a guidance which thus again and again declares its own reiterated fallibility. Mr. Darwin's conclusions may be correct, but we feel we have now indeed a right to demand that they shall be proved before we assent to them; and that since what Mr. Darwin before declared "*must* be," he now admits not only to be unnecessary but untrue, we may justly regard with extreme distrust the multitude of his statements and calculations which are recommended by a mere "*may* be." This is the more necessary, as the Author, starting at first with an avowed hypothesis, constantly asserts it as an undoubted fact, and claims for it, in the spirit of an evangelical preacher rather than of a philosopher, that it should be received as an article of faith though incapable of proof. Thus the formidable objection to Mr. Darwin's theory, that the great break in the organic chain between man and his nearest allies, which cannot be bridged over by any extinct or living species, is answered simply by an appeal "to a *belief* in the general principle of evolution" (vol. i. p. 200), or by a confident statement that "we have *every reason to believe* that breaks in the series are simply the result of many forms having become extinct" (vol. i. p. 187), though the reasons are not given. So, in like manner, we are assured that "the early progenitors of man were, *no doubt*, once covered with hair, both sexes having beards; their ears were pointed and capable of movement; and their bodies were provided with a tail, having the proper muscles." And, finally, we are told, with a dogmatism little worthy of a philosopher, that, "*unless we wilfully close our eyes*," we must recognise our parentage (vol. i. p. 213).

To criticisms such as the foregoing, as expressed in 'Genesis of Species' and in the 'Quarterly Review,' Professor Huxley has replied in his paper on "Mr. Darwin's critics" in the 'Contemporary Review' for November 1871.

Professor Huxley's defence.

In that article Professor Huxley does not so much dispute the truth of the foregoing conclusions concerning the Origin of Species as deny their distinctness from those at which Mr. Darwin himself has arrived, or indeed originally put forth, asserting that my view of Specific Genesis is but "an iteration of the fundamental principle of Darwinism."

I may be pardoned then if I shortly endeavour to show more distinctly wherein my view radically differs from that first propounded by Mr. Darwin, and still maintained, or at least not distinctly repudiated by him; though the admissions he has of late made amount to a virtual, but certainly not to an explicit, abandonment of his theory.

The Professor expresses his doubt as to the existence of an "absolute and pure Darwinian"—a doubt which was certainly surprising, as he had been always understood as guarding himself carefully against the identification of his own views with those of Mr. Darwin, and as allowing that it was one thing to hold the doctrine of evolution and another to accept the Darwinian hypothesis. In a lecture* delivered in 1868 at the Royal Institution, he observed, "I can testify, from personal experience, it is possible to have a complete faith in the general doctrine of evolution, and yet to hesitate in accepting the Nebular, or the Uniformitarian, or the Darwinian hypotheses in all their integrity and fulness."

It is plain then that at a recent period Professor Huxley distinguished himself from thorough-going disciples of Mr. Darwin; implying by this distinction a recognition of the existence of such disciples, pure Darwinians, like those of whom he in his paper ignores the existence.

The very essence of Mr. Darwin's theory as to the "origin of species" was, the paramount action of the destructive powers of nature over any *direct* tendency to vary in any certain and definite line, whether such direct tendency resulted mainly from internal predisposing or external exciting causes.

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* See 'Proceedings of the Royal Institution,' vol. v. p. 279.

The benefit of the individual in the struggle for life was announced as the one determining agent, fixing slight beneficial variations into enduring characters, and the evolution of species by such agency is justly and properly to be termed formation by "natural selection."

That in this Mr. Darwin is not misrepresented is evident from his own words before quoted:

> "If it could be demonstrated that any complex organ existed, which could not possibly have been formed by numerous, successive, slight modifications, my theory would absolutely break down."* Also: "Every detail of structure in every living creature (making some little allowance for the direct action of physical conditions) may be viewed, either as having been of special use to some ancestral form, or as being now of special use to the descendants of this form—either directly, or indirectly, through the complex laws of growth;" and "if it could be proved that any part of the structure of any one species had been formed for the exclusive good of another species, it would annihilate my theory, for such could not have been produced by natural selection." †

I repeat, emphatically, Mr. Darwin could hardly have employed words by which more thoroughly to stake the whole of his theory on the non-existence or non-action of causes of any such importance as that assigned by him to natural selection. For why, we may ask once more, should such a phenomenon "annihilate his theory"? Because the very essence of his theory, as originally put forth, is, as before said, to recognise only the conservation of slight variations directly beneficial to the creature presenting them, by enabling it to obtain food, escape enemies, and propagate its kind.

Such being the case, my object was to show not only that "natural selection" is inadequate to the task assigned it, but that there is much *positive* evidence of the direct action both of external influences sufficient to dominate and overpower in certain instances the ordinary processes of "natural selection," and also of still more influential internal powers; moreover, that these latter powers are so efficient as to present themselves as probably the main determining agent in specific evolution, although it was admitted that a certain subordinate action of natural selection plainly obtained.

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* 'Origin of Species,' p. 208.
† *Op. cit.* p. 220.

The various arguments advanced space does not now allow the reproduction of, but referring to the 'Genesis of Species,' it may here be pointed out that therein the object aimed at was to show:—

Points contended for by the author.

1. That no mere survival of the fittest accidental variations can account for the incipient stages of structures useful enough when once developed. Such, e. g., as the whalebone of the whale's mouth, the larynx of the kangaroo, pedicellariæ and bird's-head processes, and many other structures.

2. That the sexual colours of apes, the beauty of shellfish, and the complex mechanisms by which fertilisation is effected in many orchids, are quite beyond the power of natural selection to develop.

3. That modes of formation, such as in the human eye and ear, in that they spring from simultaneous and concurrent modifications of distinct parts, have a remarkable significance.

4. That the independent origin of similar structures in very different animal forms should be noted, and evidence was adduced to show that similar modifications are sometimes directly induced by obscure external conditions, as in the sudden acclimatisation of English greyhounds in Mexico, and in the loss of the tail in certain butterflies of certain regions, and in the direct modification of young English oysters when transported to the shore of the Mediterranean. Moreover, it was shown that certain groups of organic forms exhibit a common tendency to remarkable developments of particular kinds, as is the case with birds of paradise.

5. That facts may be cited to support the theory of specific stability (different in degree in different species), and to demonstrate that reversion may take place *in spite of the most careful selection in breeding*. The value of the facts of sterility in hybrids was also considered.

6. That data bearing on the relation of species to time may be brought forward, apparently fatal to their origin by the action of natural selection.

7. That the significant and important facts of the deep-seated resemblances existing not only between different individual animals,* but between different parts of one and the same individual, should be pondered over; these points being, as was shown, capable of reinforcement by others drawn from the abnormalities of monstrous births, and the symmetrical character of certain diseases.

From all these considerations, a cumulative argument seemed to arise conclusive against the theory that species have had their specific characters fixed mainly by the action of "natural selection."

This hypothesis, in fact, may be expressed as follows: that just as all admit the universe to have been so ordered—or to so exist—that on the mixing of chemical substances under certain conditions new and perfectly definite species of minerals are suddenly evolved from potentiality to existence, and as by the juxtaposition of inorganic matters under certain influences* a new form of force—"vitality"—appears upon the scene—so also in animals, the concurrence of certain external exciting causes acts in such a manner on internal predisposing tendencies as to determine by a direct seminal modification the evolution of a new specific form. The action of so-called "natural selection" was admitted to be real and necessary but an altogether subordinate *rôle* was ascribed to it.

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* Though Professor Huxley is disinclined as yet to admit that such evolution of living things takes place now, he none the less admits the principle, though he relegates such evolution to a remote epoch of the world's history. See 'Address to the British Association, Liverpool, 1870,' p. 17.

Differ from Mr. Darwin's view.

This view may be true or false, but it is a very different one from that advocated by the author of the 'Origin of Species,' and I am at a loss to understand how Professor Huxley could really consider it identical with Mr. Darwin's, more especially as (at p. 237) the points in which this theory coincides with Professor Owen's 'Derivation,' and differs from that of the author of the 'Origin of Species,' had been enumerated. It seems to me strange that Professor Huxley should now assert the "very pith and marrow" of Darwinism to have been the affirmation that "species have been evolved by variation, aided by *the subordinate action* of natural selection," when he himself, in his 'Lay Sermons' (p. 321), has enunciated simply that Mr. Darwin's hypothesis is the origin of species "*by the process of natural selection*," without one word of qualification; and five pages farther on, has considered the possibility of the refutation of Mr. Darwin's view by the discovery of residual phenomena * not explicable by "natural selection"—just such phenomena as I have endeavoured to call attention to in my book.

There is no evidence that Mr. Darwin even now *does* admit that "natural selection" has only a *subordinate* action, and, as we have seen, in the last edition of the 'Origin of Species' he still speaks of it as "*the most important* means." I do not recollect to have met with any declaration that it is only a subordinate means, although such a declaration should logically follow from the various admissions he has latterly made. If he does admit it, then a cause which is subordinate cannot be *the* determining agent. If he does not admit it, then there is a radical difference between my hypothesis and Mr. Darwin's.

Mr. Darwin has, in fact, changed his ground without, at the same time, disavowing, as he should have done, "natural selection" as *the* origin of species.

This restatement of facts has been called for by the un-scrupulous audacity with which they have been denied. It is but an act of justice to endeavour to prevent the public attaching, in mere deference to Mr. Darwin's authority, a greater weight to his assertions than the evidence adduced warrants. It has been sought to do this by showing, by Mr. Darwin's own words, he has been compelled to admit that "abrupt strongly marked changes" may occur "neither beneficial nor injurious" to the creatures possessing them, produced "by unknown agencies" lying deep in "the *nature* of the organism." In other words, that Mr. Darwin has in fact,* though not in express words, abandoned his original theory of the "origin of species."

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* His words are—"What if species should offer residual phenomena, here and there, not explicable by natural selection?" ('Lay Sermons,' p. 326.)

I am grateful, however, to Professor Huxley for having spoken of "injustice" in connection with Mr. Darwin. I am so because it affords me an opportunity for declaring myself more fully. The struggle between my inclination to praise and to acquiesce, and my sense of duty which impelled me to dissent, led me to express myself very imperfectly, and I thank Professor Huxley for having given me occasion to acknowledge my regret that these sentiments should have led me to give in my 'Genesis of Species' such very inadequate expression to my dissent from, and reprobation of, Mr. Darwin's views, especially as manifested in their later developments.

As to the principles embodied in Mr. Darwin's 'Origin of Species,' the further study of them more and more brings home to me their unsatisfactoriness. Indeed, "natural selection," as *the* agent for the determination of specific animal forms, is, I am convinced, utterly insufficient to the task assigned it; while the reasoning employed in the 'Descent of Man' to support the hypothesis of our ape origin* seems to me, to say the least, unworthy of Mr. Darwin's earlier productions.

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* Professor Huxley now tells us that Mr. Darwin is inclined to admit that varieties can "be perpetuated, or even intensified, when selective conditions are indifferent, or perhaps unfavourable" to their "existence." Surely, if species may be evolved in the teeth of all the opposition "natural selection" can offer, it is, to say the least, somewhat paradoxical to affirm that nevertheless natural selection is *their cause*. For all this Mr. Darwin has not, I believe, expressly said that the action of "natural selection" is only *subordinate*, though he asserts it to be co-ordinate. So that though he has virtually given up his original theory, his view does not yet coincide with mine, as far as I can gather from his words.

What is and is not implied in man's animality.

Professor Huxley attributes "peculiar notions of probability" to whoever affirms that if all animals below man *have* been evolved one from the other, then a close resemblance in man's body to any particular animal's does not increase that *à priori* probability as to his bodily evolution which springs from the fact of his being "an animal at all." But surely if it was of the essence of an animal to be "evolved," so that to be an animal implied being a creature formed by evolution, then the fact of man being an animal would necessarily have a similar implication, and I fail to see what additional force that probability would obtain through any particular resemblance. On the other hand, if there is authority for believing that man's body was miraculously created, such particular resemblance would not render such a miracle one bit less credible; for there is no necessity, on the hypothesis of such miraculous creation, for more than even a specific difference between his body and that of some other animal.

Professor Huxley declares the assertion that man differs more from an ape than does an ape from inorganic matter is the sign of the "absence of a sound philosophical basis" in its assertor. But surely this is the position every one must assume who believes that man is immortal, and has a moral responsibility to God. For it is manifest that such distinctions (e.g., growth, nutrition, locomotion, &c.) as exist between apes and minerals are as nothing compared with the transcendent distinction above referred to. If, then, in saying this we are in "philosophical error," we share that error with all those who assert the immortality of the soul, and a moral responsibility of each man to God such as no brute possesses. We can also claim as more or less on our side even one of the originators of the theory of "natural selection" itself, and his followers; for Mr. Wallace, if I understand him rightly, teaches us that for the evolution of man's body special spiritual agencies were required, which were not needed for the rest of the organic world. So that, according to this view, man is marked off from all the rest of nature by a very special distinction.

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* The much-ridiculed Lord Monboddo has been successfully redeemed from very unjust depreciation in an interesting article which has lately appeared. See the 'Month' for November 1871.

Mr. Wallace's claims to originality.

And here, the name of Mr. Wallace having been mentioned, I must refer to Professor Huxley's criticism on a remark made through my desire to do justice to Mr. Wallace. It is an undoubted fact that there are many men who, if they had thought out natural selection simultaneously with Mr. Darwin, would have clamorously sought a recognition of the fact, and have lost no opportunity of asserting simultaneity. No one can affirm that Mr. Wallace has shown the faintest inclination of the kind, while no one can deny that if he had followed the clamorous path, his name would have been more widely known and more popularly associated with natural selection than has been, in fact, the case.

It is a gratuitous assertion on the part of Professor Huxley to say I suggested that Mr. Darwin's eminence is due to Mr. Wallace's modesty in any other sense than as now explained, namely, that had Mr. Wallace put himself more prominently forward, he would have been seen more distinctly by the popular eye—an assertion no one can question.

As a fact, I believe that Mr. Wallace, in the passage quoted by Professor Huxley, allows his modesty to deceive him. From what I know of Mr. Wallace, I venture to affirm he underrates his powers, and I am convinced he *could* have written as good a defence of natural selection as even the 'Origin of Species.' There are not wanting those who, though they have carefully studied Mr. Darwin's work, only fully understood his theory when presented to their minds in the clear, lucid, and admirable writings of Mr. Wallace. In this matter I have the support of an eminent Darwinian, for Dr. Hooker, in his address to the British Association at Norwich, made the following remarks on this subject: "Of Mr. Wallace and his many contributions to philosophical biology, it is not easy to speak without enthusiasm; for putting aside their great merits, he, throughout his writings, with a modesty as rare as I believe it to be in him unconscious, forgets his own unquestioned claims to the honour of having originated, independently of Mr. Darwin, the theories which he so ably defends."*

Mr. Darwin's style.

Having, then, examined the meaning and nature of the hypothesis of "Natural Selection," it is necessary to call attention to the mode and manner of its advocacy by its author—a style calculated to impress, by authority of tone, minds easily dominated, and not prepared by special studies to accurately weigh the evidence put before them. Two objections may be made to Mr. Darwin's mode of advocacy. The first is a too great tendency to dogmatic assertions. The second is a habit of quietly slipping in, or assuming, in his arguments the presence of some power or quality when its existence is the very point in dispute. This applies as much, or more, to his remarks on the distinctive mental qualities of man as to those on questions of the structure or habits of animals.

Thus, to take for instance the theory of the descent of man from some inferior form, he says: "The grounds upon which this conclusion rests *will never be shaken*" (vol. ii. p. 385), and "the possession of exalted mental powers is *no* insuperable objection to this conclusion" (vol. i. p. 107). Also (vol. i. p. 32): "It is *only* our natural prejudice" "which leads us to demur to this conclusion." Yet we might surely be led to demur by the conviction that not to do so would be to contradict evident truths. Speaking of sympathy, he boldly remarks: "This instinct *no doubt* was originally acquired, like all the other social instincts, through natural selection" (vol. i. p. 164); and "the fundamental social instincts *were* originally thus gained" (vol. i. p. 173).

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* See 'Report' for 1868, p. lxxi.

He tells us (vol. i. p. 155): "The pollen-collecting apparatus, or the sting of the worker-bee, or the great jaws of soldier-ants *have been* thus acquired," i.e., by natural selection.

It is rarely that Mr. Darwin fails in courtesy to his opponents; and one may well therefore be surprised at the tone of the following passage (vol. ii. p. 386): "He who is not content to look *like a savage*, at the phenomena of nature as disconnected, *cannot* any longer believe that man is the work of a separate act of creation. He will be *forced* to admit" the contrary. What justifies Mr. Darwin in taking this tone of superiority, and in his assumption that to suppose the soul of man to have been specially created, is to regard the phenomena of nature as disconnected?

He begs the question he argues.

Secondly, as an instance of Mr. Darwin's too frequent practice of begging the question at issue, the following assertion may be quoted: "Any animal whatever, endowed with well-marked social *instincts*, would inevitably acquire a moral sense or *conscience*, as soon as its intellectual powers had become as well developed, or nearly as well developed, as in man" (vol. i. p. 71). This is either a monstrous assumption or a mere truism; it is a truism, for of course, any creature with the intellect of a man would perceive the qualities men's intellect is capable of perceiving, and, amongst them—moral worth.

Mr. Darwin, in a passage before quoted (vol. i. p. 86) slips in the whole of absolute morality, by employing the phrase "appreciation of justice." Again (vol. i. p. 168), when he speaks of aiding the needy, he remarks: "Nor could we check our sympathy, if so urged by hard reason, without deterioration in the *noblest* part of our nature." How noblest? According to Mr. Darwin, a virtuous instinct is a strong and permanent one. There can be, according to his views, no other elements of quality than intensity and duration. Mr.

Darwin, in fact, thus silently introduces the moral element into his "social instinct," and then, of course, has no difficulty in finding in this latter what he had previously put there.

Mr. Darwin's hypothesis has been examined at length by me in the 'Genesis of Species,' and the causes have been there assigned which have determined me to reject it in favour of the conception of an internal force—a conclusion which has also been arrived at by various other naturalists; Professor Owen, as has been said, amongst them.

Dr. Carpenter has observed (in a periodical called 'Il Barth'), of the origin of new species by the appearance of modified individuals: "Natural selection is asssuredly not that cause." "Consequently we must look to *forces* acting either *within* or *without* the organism as the real agents." "This much seems to me clear: that just as there is at the present time a determinate capacity for a certain fixed kind of development in each germ, in virtue of which one evolves itself into a zoophyte, and another (though not originally distinguishable from it) into a man, so must the *primordial* germs have been endowed each with its determinate capacity for a particular *course of development;* in virtue of which it has evolved the whole succession of forms that has ultimately proceeded from it. That the 'accidents' of Natural Selection should have produced that orderly succession, is to my own mind inconceivable."

Conclusion as to "Natural Selection."

It cannot then be contested that the far-famed "*Origin of Species*," that, namely, by "*Natural Selection*," has been repudiated, in fact, though not expressly, even by its own author. This circumstance, which is simply undeniable, might dispense us from any further consideration of the hypothesis itself. But the "conspiracy of silence" which has accompanied the repudiation tends to lead the unthinking many to suppose that the same importance still attaches to it as at first. On this account it may be worth while to ask the question, what, after all, *is* "Natural Selection"?

The answer may seem surprising to some, but it is none the less true, that "Natural Selection" is simply nothing. It is an apparently positive name for a really negative effect, and is therefore an eminently misleading term. By "Natural Selection" is meant the result of all the destructive agencies of nature, destructive to individuals and to races by destroying their lives or their powers of propagation. Evidently the cause of the distinction of species (supposing such distinction to be brought about in natural generation) must be that which causes variation, and variation in one determinate direction in at least several individuals simultaneously. At the same time it is freely conceded that the destructive agencies of nature do succeed in preventing the perpetuation of monstrous, abortive, and feeble attempts at the performance of the evolutionary process, that they remove rapidly antecedent forms when new ones are evolved more in harmony with surrounding conditions, and that their action results in the promotion of new characters when these have once attained sufficient completeness to be of real utility to their possessor.

Continued reflection, and five years' further pondering over the problem of specific origin, have more and more convinced me the conception that the origin of all species, "man included," is due simply to conditions which are (to use *Mr. Darwin's own words*) "strictly accidental," is a conception utterly irrational. This conception is not that of Mr. Wallace, who makes of man a special exception. With regard to the conception as now put forward by Mr. Darwin, however, I cannot truly characterize it but by an epithet which I employ only with much reluctance. I weigh my words, and have present to my mind the many distinguished naturalists who have accepted the notion, and yet I cannot hesitate to call it a "*puerile hypothesis.*" I call it puerile and not infantine, because in the infancy of nations as of individuals the tendency is to explain each visible action by a direct supernatural intervention. Reaction from this *infantine* condition tends to the exclusion from our conception of the First Cause, of knowledge, purpose and will altogether, as in the Ionian Philosophy which reappears amongst us to-day—the *puerile* view. This puerile view results from a want of appreciation of human reason. *Maturity* reconciles the apparently diverging truths contained in each assertion and represents the material universe as always and everywhere sustained and directed by an infinite Cause, for which to us the word MIND is the least inadequate and misleading of symbols.

CHAPTER X.

SEXUAL SELECTION.

> "Sexual selection is an hypothesis which neither has been nor can be proved true, but the falsehood of which is demonstrated by a mass of zoological data."

Sexual selection, an accessory hypothesis.

THE hypothesis of "natural selection" having been found by its author unequal for the task he had assigned it, that of serving as the explanation of specific origin, he subsequently brought forward to its aid a subordinate hypothesis, which he termed "*sexual selection.*" The present chapter will be devoted to the consideration of what lessons we can derive from nature as to the existence and action of this process.

In considering the Origin of Man, Mr. Darwin brings in his addition of "sexual selection" to the aid of "natural selection." We need not here further consider the action of "natural selection;" but since Mr. Darwin is convinced that the action of "sexual selection" is necessary to account for man's origin and present condition, it will be necessary to consider "sexual selection" at some length. It plays the most important part in the "descent of man," according to Mr. Darwin's views. He maintains that we owe to it our power of song and our hairlessness of body, and that also to it is due the formation and conservation of the various races and varieties of the human species. Indeed "sexual selection" is now the corner-stone of Mr. Darwin's theory. It occupies three-fourths of his work on Man; and unless he has clearly established this point, the whole fabric falls to the ground. It is impossible, therefore, to estimate his views adequately without entering fully into the subject.

Under the head of "sexual selection" Mr. Darwin includes, however, two very distinct processes. One of these consists in the action of superior strength or activity, by which one male succeeds in obtaining possession of mates and in keeping away rivals. This is, undoubtedly, a *vera causa*, but may be more conveniently reckonod as one mode of "natural selection" than as a branch of "sexual selection." The second process consists in alleged preference or choice, exercised freely by the female in favour of particular males on account of some attractiveness or beauty of form, colour, odour, or voice, which such males may possess. It is this second form of "sexual selection" (and which alone deserves the name) that is important for the truth of Mr. Darwin's views, but the validity of which has to be proved.

Has been made to include two distinct things.

Now, to prove the existence of such a power of choice Mr. Darwin brings forward a multitude of details respecting the sexual phenomena of animals of various classes; but it is the class of birds which is mainly relied on to afford evidence in support of the exercise of this power of choice by female animals. It is contended, however, that not only is the evidence defective even with respect to birds, but that much of his own evidence is in direct opposition to his views; while the unquestionable fact, that male sexual characters (horns, mane, wattles, &c. &c.) are developed in many cases where sexual selection has certainly not acted, renders it probable, *à priori*, that the unknown cause which has operated in these numerous cases has operated in those instances also which seem to favour the hypothesis Mr. Darwin supports. Still he contends that the greater part of the beauty and melody of the organic world is due exclusively to this selective process, by which, through countless generations, the tail of the peacock, the throat of the humming-bird, the song of the nightingale, and the chirp of the grasshopper have been developed through the females, age after age, selecting for their mates, males possessing in a more and more perfect degree characters which must thus have been continually and constantly preferred.

Marked characters certainly arise independently of it.

Yet, after all, Mr. Darwin concedes *in principle* the very point in dispute, and yields all for which his opponents need argue, when he allows that beautiful and harmonious variations may occur *spontaneously* and *at once,* as in the dark or spangled bars on the feathers of Hamburg fowls (' Descent of Man,' vol. i. p. 281). For what difference is there, other than mere difference of degree, between the spontaneous appearance of a few beautiful new feathers with harmonious markings and the spontaneous appearance of a whole beautiful clothing like that of the Tragopans?

Again, on Mr. Darwin's own showing, it is manifest that male sexual characters, such as he would fain attribute to sexual selection, may arise without any such action whatever. Thus he tells us: "There are breeds of the sheep and goat, in which the horns of the male differ greatly in shape from those of the female;" and "with tortoise-shell cats, the females alone, as a general rule, are thus coloured, the males being rusty-red" (vol. i. p. 283). Now, if these cats were only known in a wild state, Mr. Darwin would certainly bring them forward amongst his other instances of alleged sexual selection, though we now know the phenomenon is not due to any such cause. A more striking instance, however, is the following: "With the pigeon, the sexes of the parent species do not differ in any external character; nevertheless, in certain domesticated breeds the male is differently coloured from the female. The wattle in the English carrier-pigeon, and the crop in the pouter, are more highly developed in the male than in the female;" and this has arisen, "not from, but rather *in opposition to,* the wishes of the breeders!" This amounts to a positive demonstration that sexual characters may arise spontaneously, and, be it noted, in the class of birds.

As to intestinal worms, he says, on the authority of Dr. Baird:—

> "The males of certain Entozoa differ slightly in colour from the females; but we have no reason to suppose that such differences have been augmented through sexual selection."

But if sexual character is here allowed to be due to some other cause, why is it not so due elsewhere also? The question suggests itself after reading the following sentence:—

> "Many corals, sea-anemones, some jelly-fishes, Planariæ, Ascidians, starfishes, Echini, &c.," "are ornamented with the most brilliant tints, or are shaded and striped in an elegant manner;" yet here "we may conclude that such colours have *not been acquired through sexual selection.*"—Vol. i. p. 321.

Insects.

The uncertainty which besets these speculations of Mr. Darwin is evident at every turn. What, at first, could be thought a better instance of sexual selection than the light of the glowworm, exhibited to attract her mate? Yet the discovery of luminous larvæ, which of course have no sexual action, leads Mr. Darwin to observe that "It is very doubtful whether the primary use of the light is to guide the male to the female" (vol. i. p. 345). Again, as to certain British field-bugs, he says, "If in any species the males had differed from the females in an analogous manner, we *might have been justified* in attributing such conspicuous colours to sexual selection with transference to both sexes" (vol. i. p. 350). As to the stridulating noises of insects (which is assumed to be the result of sexual selection), Mr. Darwin remarks of a certain Neuropteron: "It is rather surprising that both sexes should have the power of stridulating, as the male is winged and the female wingless" (vol. i. p. 366); and he is again surprised to find that this power is not a sexual character in many Coleoptera (vol. i. p. 382), i.e., not different in the two sexes.

Moths and butterflies, however, are the insects which Mr. Darwin treats of at the greatest length in support of sexual selection. Yet even here he supplies us with a thorough demonstration that in certain cases beauty does not charm the female. He tells us:—

> "Some facts, however, are opposed to the belief that female butterflies prefer the more beautiful males; thus, as I have been assured by several observers, fresh females may frequently be seen paired with battered, faded, or dingy males."—Vol. i. p. 400.

As to the Bombycidæ he adds :—

> "The females lie in a torpid state, and appear not to evince the least choice in regard to their partners. This is the case with the common silk-moth (*B. mori*). Dr. Wallace, who has had such immense experience in breeding *Bombyx cynthia*, is convinced that the females evince no choice or preference. He has kept above three hundred of these moths living together, and has often found the most vigorous females mated with stunted males."

Nevertheless, we do not find, for all this, any defect of colour or markings, for, as Mr. Wallace observes ('Nature,' March 15, 1871, p. 182), "the Bombyces are amongst the most elegantly coloured of all moths."

Mr. Darwin gives a number of instances of sexual characters, such as horns, spines, &c., in beetles and other insects; but there is no fragment of evidence that such structures are in any way due to feminine caprice. Other structures are described and figured which doubtless do aid the sexual act, as the claws of certain Crustacea; but these are often of such size and strength (e.g., in *Callianassa* and *Orchestia*) as to render any power of choice on the part of the female in the highest degree incredible.

Fishes and Reptiles.

Similarly with the higher classes, i.e., fishes, reptiles, and beasts, we have descriptions and representations of a number of sexual peculiarities, but no evidence whatever that such characters are due to female selection. Often we have statements which conflict strongly with any such action. Thus, e.g., Mr. Darwin quotes Mr. R. Buist, Superintendent of Fisheries, as saying that male salmon

> "are constantly fighting and tearing each other on the spawning-beds, and many so injure each other as to cause the death of numbers, many being seen swimming near the banks of the river in a state of exhaustion, and apparently in a dying state; and that the keeper of Stormontfield found in the northern Tyne about three hundred dead salmon, all of which, with one exception, were males; and he was convinced that they had lost their lives by fighting."—Vol. ii. p. 3.

The female's choice must here be much limited, and the only kind of sexual selection which can operate is that first kind due to direct conflict, which, we before observed, must rather be ranked as a kind of "natural selection." Even with regard to this, however, we may well hesitate, when Mr. Darwin tells us, as he does, that, seeing the habitual contests of the males, "it is surprising that they have not generally become, through the effects of sexual selection, larger and stronger than the females;" and this the more as "the males suffer from their small size," being "liable to be devoured by the females of their own species" (vol. ii. p. 7). The cases cited by our author with regard to fishes do not even tend to prove the existence of sexual selection, and the same may be said as to the numerous details given by him about reptiles and amphibians. Nay, rather the facts are hostile to his views. Thus he says himself, "It is surprising that frogs and toads should not have acquired more strongly-marked sexual differences; for, though cold-blooded, their passions are strong" (vol. ii. p. 26). But he cites a fact, than which it would be difficult to find one less favourable to his cause, seeing that amphibians have some sexual characters after all. He adds: "Dr. Günther informs me that he has several times found an unfortunate female toad dead and smothered from having been so closely embraced by three or four males." If female selection was difficult in the case of the female salmon, it must be admitted to have been singularly infelicitous to the female toad.

Beasts.

We may now notice some facts brought forward by Mr. Darwin with regard to beasts. And first, as to the existence of choice on the part of the females, it must be noted that "Mr. Blenkiron, the greatest breeder of racehorses in the world, says that stallions are so frequently capricious in their choice, rejecting one mare and without any apparent cause taking to another, that various artifices have to be habitually used." "He has *never known a mare to reject a horse;*" though this has occurred in Mr. Wright's stable.

Mr. Darwin allows (vol. ii. p. 276) that the loud voice of the stag is not due to sexual selection; but some of the most marked sexual characters found amongst mammals are those which exist in apes. These are abundantly noticed by Mr. Darwin, but his treatment of them seems to show his inability to bring them within the scope of his theory.

It is well known that certain apes are distinguished by the lively colours or peculiarities as to hair possessed by the males, while it is also notorious that their vastly superior strength of body and length of fang would render resistance on the part of the female difficult and perilous, even were we to adopt the utterly gratuitous supposition, that at seasons of sexual excitement the female shows any disposition to coyness. Mr. Darwin has no argument to bring forward to prove the exercise of any choice on the part of female apes, but gives in support of his views the following remarkable passage:—

> "Must we attribute to mere purposeless variability in the male all these appendages of hair and skin? It cannot be denied that this is possible; for, with many domesticated quadrupeds, certain characters, apparently not derived through reversion from any wild parent-form, have appeared in, and are confined to, the males, or are more largely developed in them than in the females,—for instance, the hump in the male zebu-cattle of India, the tail in fat-tailed rams, the arched outline of the forehead in the males of several breeds of sheep, the mane in the ram of an African breed, and, lastly, the mane, long hairs on the hinder legs, and the dewlap in the male alone of the Berbura goat."—vol. ii. p. 284.

If these are due, as is probable, to simple variability, then, he adds—

> "It would appear reasonable to extend the same view to the many analogous characters occurring in animals under a state of nature. Nevertheless I cannot persuade myself that this view is applicable in many cases, as in that of the extraordinary development of hair on the throat and fore-legs of the male Ammotragus, or of the immense beard of the Pithecia (monkey)."—vol. ii. p. 285.

But one naturally asks, Why not? Mr. Darwin gives no reason (if it may be called such) beyond that implied in the gratuitous use of the epithet "purposeless" in the passage cited, and to which we shall return.

In the Rhesus monkey the female appears to be more vividly coloured than the male; therefore Mr. Darwin infers (grounding his inference on alleged phenomena in birds) that sexual selection is *reversed*, and that in this case the male selects. This hypothetical reversion of a hypothetical process to meet an exceptional case will appear to many rash indeed, when they reflect that as to teeth, whiskers, general size, and superciliary ridges this monkey "follows the common rule of the male excelling the female" (vol. ii. p. 284).

Birds.

To turn now to the class on which Mr. Darwin especially relies, we shall find that even birds supply us with numerous instances which conflict with his hypothesis. Thus, speaking of the battling of male waders, our author tells us: "Two were seen to be thus engaged for half an hour, until one got hold of the head of the other, which would have been killed had not the observer interfered; the female all the time looking on as a quiet spectator" (vol. i. p. 40). As these battles must take place generally in the absence of spectators, their doubtless frequently fatal termination must limit greatly the power of selection which Mr. Darwin attributes to the females. The same limit is certainly imposed in the majority of gallinaceous birds, the cocks of which fight violently; and there can be little doubt but that, as an almost invariable rule, the victorious birds mate with the comparatively passive hens.

Again, how can we explain, on Mr. Darwin's hypothesis, the existence of distinguishing male sexual marks, where it is the male and not the female bird which selects? Yet the wild turkey-cock, a distinguished bird enough, is said by Mr. Darwin (vol. ii. p. 207) to be courted by the females; and he quotes (vol. ii. p. 120) Sir R. Heron as saying, "that with peafowl the first advances are always made by the female." And of the capercailzie he says, "The females flit round the male while he is parading, and solicit his attention."

But though, of course, the sexual instinct always seeks its gratification, does the female *ever* select a particular plumage? The strongest instance given by Mr. Darwin is as follows:—

> "Sir R. Heron during many years kept an account of the habits of the peafowl, which he bred in large numbers. He states that the hens

> have frequently great preference for a particular peacock. They were all so fond of an old pied cock, that one year, when he was confined though still in view, they were constantly assembled close to the trellis-walls of his prison, and would not suffer a japanned peacock to touch them. On his being let out in the autumn, the oldest of the hens instantly courted him, and was successful in her courtship. The next year he was shut up in a stable, and then the hens all courted his rival. This rival was a japanned or black-winged peacock, which to our eyes is a more beautiful bird than the common kind."—vol. ii. p. 120.

Now no one disputes as to birds showing preferences one for another; but it is quite a gratuitous suggestion that the pied plumage of the venerable paterfamilias was *the* charm which attracted the opposite sex; and even if such were the case, it would seem (from Mr. Darwin's concluding remark) to show either that the peahen's taste is so different from ours, that the peacock's plumage could never have been developed by it, or (if the taste of these peahens was different from that of most peahens) that such is the instability of a vicious feminine caprice, that no constancy of coloration could be produced by its selective action.

Another instance, which Mr. Darwin considers a "striking case," is that "a male silver-pheasant, who had been triumphant over the other males, and was the accepted lover of the females, had his ornamental plumage spoiled. He was then immediately superseded by a rival, who got the upper hand, and afterwards led the flock." But, in the first place, what is the meaning of "got the upper hand"? If this means "conquered in fight," the whole case is simple enough; and without such conquest it is difficult to see how the second male could have "afterwards led the flock." But even if it does not mean conquest, it need only mean that the change of plumage caused an interruption in the associated sensations of the females, such that they mistook his identity, and no longer recognised their mate. But a solitary observation of Dr. Jaeger requires confirmation, and is indeed of little value in supporting what, if it be correct, is but a hypothetical interpretation of its meaning, while numerous other observations directly contradict any such hypothesis. Thus Mr. Darwin himself says of fowls:—

> "I have received long letters on this subject from Messrs. Hewitt and Tegetmeier, and almost an essay from the late Mr. Brent. It will be admitted by every one that these gentlemen, so well known from their published works, are careful and experienced observers. They do not believe that the females prefer certain males on account of the beauty of their plumage." "Mr. Tegetmeier is convinced that a gamecock, though disfigured by being dubbed with his hackles trimmed, would be accepted as readily as a male retaining all his natural ornaments." As to pigeons, "Mr. Tegetmeier, at my request, stained some of his birds with magenta, but they were not much noticed by the others."—vol. ii. pp. 117, 118.

But there are remarkable instances of sexual characters which cannot be due to female selection or to selection at all. Thus Mr. Darwin was shown by Mr. Bartlett that the *inside of the mouth* of the hornbill, *B. bicornis*, "is black in the male and flesh-coloured in the female" (vol. ii. p. 129). Again, we learn that "the *females* of *Paradisea apoda* and *P. papuana* differ from each other more than do their respective males" (vol. ii. p. 192). And again, "The males of two species of *Oxynotus* (shrikes), which represent each other in the islands of Mauritius and Bourbon, differ but little in colour, whilst the females differ much." Moreover, Mr. Darwin compares these with "certain sub-breeds of the game fowl, in which the females are very different, whilst the males can hardly be distinguished"—differences which he allows *we cannot explain*. And indeed the fact that sexual plumage may arise without any sexual selection whatever, or indeed selection of any kind, is abundantly demonstrated by the case of the pigeons before noticed, and by the fact that in fowls "the two sexes of pencilled Hamburgs differ greatly from each other, and from the two sexes of the aboriginal *Gallus bankiva*" (vol. ii. p. 158).

Mr. Darwin bases his theory of sexual selection greatly on the fact that the male birds display the beauty of their plumage with elaborate parade and many curious and uncouth gestures. But this display is not exclusively used in attracting and stimulating the hens. Thus he admits that "the males will sometimes display their ornaments when *not* in the presence of the females, as occasionally occurs with the grouse at their balz-places, and as may be noticed with the peacock; this latter bird, however, evidently wishes for a spectator *of some kind*, and will show off his finery, as I have often seen, before poultry or even pigs" (vol. ii. p. 86). Again, as to the brilliant *Rupicola crocea*, Sir R. Schomburgk says: "A *male* was capering to the apparent delight of several *others*" (vol. ii. p. 87).

Voice.

Mr. Darwin considers singing as well as display of plumage to be one of the attractions for which males are selected by females, and that in consequence of this the faculty has been developed in certain species to the degree of perfection which we now find it has attained. There are, however, reasons for thinking that it is by no means the sexual instinct alone which occasions this exercise of the vocal powers. Our author himself admits (vol. ii. p. 52), that at any rate "many naturalists believe that the singing of birds is almost exclusively 'the effect of rivalry and emulation,' and not for the sake of charming their mates;" and in confirmation of this he mentions an instance of "a sterile hybrid canary bird," which by its singing demonstrated that the habit is at least "sometimes quite independent of love."

It is difficult to suppose that sexual selection can have simultaneously developed in a high degree both power of song and singularity of plumage. Yet the Umbrella bird has both:—

> "It has an immense top-knot, formed of bare white quills surmounted by dark-blue plumes, which it can elevate into a dome no less than five inches in diameter, covering the whole head. This bird also has on its neck a long, thin, cylindrical, fleshy appendage, which is thickly clothed with scale-like blue feathers. It probably serves in part as an ornament, but likewise as a resounding apparatus, for Mr. Bates found that it is 'connected with an unusual development of the trachea and vocal organs.' The bird utters a singularly deep, loud, and long-sustained fluty note."—Vol. ii. p. 58.

Again, the Bell bird is an instance of the simultaneous existence of "extreme contrast in colour between the sexes" (vol. ii. p. 79)—the male being pure white while the female is dusky-green— with remarkable vocal powers, for its note "can be distinguished at the distance of nearly three miles, and astonishes every one who first hears it." But why may not both the song of birds and their display, be phenomena analogous to the voice of the stag or the lion, the development of which Mr. Darwin does not by any means consider due to sexual selection? He says:—

> "The loud voice of the stag does not seem to be of any special service to him, either during his courtship or battles, or in any other way. But may we not believe that the frequent use of the voice, under the strong excitement of love, jealousy, and rage, continued during many generations, may at last have produced an inherited effect on the vocal organs?"—Vol. ii. p. 276.

But if this may be the case in the stag, an extension of the same principle would sufficiently account for the song of birds. In a parallel way we may conceive that the male pheasants instinctively display themselves at the breeding season, without any necessity of attributing their success in wooing to their plumage, when we have seen how often it must rather be due to their strength and prowess. Indeed, Mr. Darwin himself somewhat singularly remarks (vol. ii. p. 95): "We must, however, be cautious in concluding that the wings are spread out solely for display, as some birds act thus *whose wings are not beautiful;*" and he adds, "All male birds of the same species display themselves exactly in the same manner." So again the Howling monkeys have been considered to perform their sonorous if not melodious concert for its own sake, apart from any intention of female captivation. Mr. Darwin says: "An excellent observer, Rengger, could not perceive that they were excited to begin their concert by any special cause; he thinks that, like many birds, they delight in their own music, and try to excel each other" (vol. ii. p. 277).

From the fact of "display" Mr. Darwin concludes that "it is obviously probable that the females appreciate the beauty of their suitors" (vol. ii. p. 111). Our author, however, only ventures to call it "*probable,*" and he significantly adds: "It is, however, difficult to obtain direct evidence of their capacity to appreciate beauty." And again he says of the hen bird: "It is not probable that she consciously deliberates; but she is most excited or attracted by the most beautiful, or melodious, or gallant males" (vol. ii. p. 123). No doubt the plumage, song, &c., all play their parts in aiding the various processes of life; but to stimulate the sexual instinct, even supposing this to be the object, is one thing—to supply the occasion for the exercise of a power of choice is quite another. Certainly we can never admit what Mr. Darwin strongly affirms (vol. ii. p. 124), that an "even occasional preference by the female of the more attractive males would almost certainly lead to their modification."

A singular instance is given by Mr. Darwin (vol. ii. p. 111) in support of his view, on the authority of Mr. J. Weir. It is that of a bullfinch which constantly attacked a reed-bunting, newly put into the aviary; and this attack is attributed to a sort of jealousy on the part of the blackheaded bullfinch of the black head of the bunting. But it is somewhat difficult to know how the bullfinch became aware of the colour of the top of his own head!

Mr. Wallace opposes Mr. Darwin.

Mr. Alfred Wallace has, in the following passage, well expressed two objections to Mr. Darwin's theory of sexual selection which have also occurred to the minds of others:—

> "There are two difficulties in the way of accepting Mr. Darwin's wide generalisation as to the agency of sexual selection in producing the greater part of the colour that adorns the animal world. How are we to believe that the action of an ever-varying fancy for any slight change of colour could produce and fix the definite colours and markings which actually characterize species? Successive generations of female birds choosing any little variety of colour that occurred among their suitors would necessarily lead to a speckled or piebald and unstable result, not to the beautiful definite colours and markings we see. . . . How can the individual tastes of hundreds of successive generations of female birds produce any such definite or constant effect? Some law of necessary development of colour in certain parts

of the body and in certain hues is first required, and then perhaps, in the case of birds, the female might choose the successive improvements as they occurred; though unless other variations were altogether prevented, it seems just as likely that they would mar the effect the law of development of colour was tending to produce."

"The other objection is, that there are signs of such a tendency, which, taken in connection with the cases of caterpillars, of shells, and other very low organisms, may cover the whole ground in the case of insects, and render sexual selection of colour as unnecessary as it is unsupported by direct evidence. In many islands of the Malay Archipelago, species of widely different genera of butterflies differ, in *precisely the same way* [the italics are ours] as to colour or form, from allied species in other islands. The same thing occurs to a less degree in other parts of the world. Here we have indications of some local modifying influence which is certainly not sexual selection. So, the production in the males only of certain butterflies of a peculiar neuration of the wings, of differently formed legs, and especially of groups of peculiarly formed scales only to be detected by microscopical examination, indicate the existence of some laws of development capable of differentiating the sexes other than sexual selection."

But it is not only insects, but also birds, which present similar parallel variations connected with locality, and certainly not due to sexual selection. The element of caprice, which Mr. Wallace urges as an objection, is admitted by Mr. Darwin himself, for he speaks of sexual selection as depending "on an element eminently liable to change—namely, the taste or admiration of the female" (vol. ii. p. 192).

His hypothesis as to colour.

Mr. Wallace himself accounts for the brilliant colours of caterpillars and many birds in another way. The caterpillars which are distasteful must have gained, if "some outward sign indicated to their would-be destroyer that its prey was a disgusting morsel." As to birds, he believes that brilliance of plumage is developed where not hurtful, and that the generally more sober plumage of the hens has been produced by natural selection killing off the more brilliant ones exposed during incubation to trying conditions.

Now as Mr. Wallace disposes of Mr. Darwin's views by his objections, so Mr. Darwin's remarks tend to refute Mr. Wallace's positions, and the result seems to point to the existence of some unknown innate and internal law which determines at the same time both coloration and its transmission to either or to both sexes. At the same time these authors plainly show the *harmony* of natural laws and processes one with another, and their mutual interaction and aid.

Mr. Darwin opposes Mr. Wallace's hypothesis.

Thus it is reasonable to suppose that whatever cause has produced brilliant colour in either fishes or caterpillars may have produced them in both. But so far from brilliancy producing concealment in coral-reef frequenting fishes, as Mr. Wallace believes, Mr. Darwin says, "According to my recollection they were thus rendered highly conspicuous." As to their so giving evidence of being unpalatable, he adds, "It is not, I believe, known that any fish, at least any freshwater fish, is rejected from being distasteful to fish-devouring animals" (vol. ii. p. 18). This, of course, does not prevent the brilliancy of caterpillars being due to its warning-off power, but it tends to show that it can exist without any such cause; while mere brilliancy is by no means all that has to be accounted for, but a variety of stripes, spots, and definite patterns, the evolution of which, as they are not protective or selected, must be referred to some internal law.

As to the dulness of female birds being due to protective "natural selection," Mr. Darwin objects (vol. ii. p. 21) that fish which sit and hatch their young are brilliant enough. Quoting from Agassiz, he says: "It ought to be observed that these sitters are among the brightest species of their respective families; for instance, *Hygrogonus* is bright green, with large black ocelli, encircled with the most brilliant red." Again of the pipe-fishes: "The genus *Solenostoma* offers a very curious exceptional case, for the female is much more vividly coloured and spotted than the male, and she alone has a marsupial sack and hatches the eggs." Again, in some lizards we meet with the same phenomena as in so many birds, namely, a greater soberness of colour in the females. As Mr. Darwin most justly remarks: "The less conspicuous colours of the females in comparison with those of the males cannot be accounted for, as Mr. Wallace believes to be the case in birds, by the exposure to danger of the females during incubation" (vol. ii. p. 37).

But if in these cold-blooded classes we have this sexual difference developed by an innate law, why may not a similar cause produce the phenomena in question in the class of birds also?

We may indeed well ask this question, since varieties arise from time to time possessing sexually distinct plumage which obviously cannot be due to any protecting action of female sobriety of colour. Thus "there are breeds of the pigeon in Belgium in which the males alone are marked with black striæ," and "in the case of the fowl variations of colour limited in their transmission to the male sex habitually occur" (vol. ii. p. 157). Certainly the large crop and wattles of male pigeons are not due to the cause assigned by Mr. Wallace, nor indeed to sexual selection either, "for fanciers have not selected one sex more than the other, and have had no wish that these characters should be more strongly displayed in the male than in the female, yet this is the case with both breeds." But even more may be said; for, as Mr. Darwin justly remarks, if the brightly-coloured females had been continually destroyed, then the effect would not be the forming a strong contrast between male and female birds, but rather "the lessening or annihilation of the bright colours of the males, owing to their continually crossing with the duller females" (vol. ii. p. 160). There are also many striking instances in which the relation which Mr. Wallace supposes to exist between a covered nest and female plumage as bright as that of the male does not obtain. "Thus the male house-sparrow (*Passer domesticus*) differs much from the female, the male tree-sparrow (*P. montanus*) differs hardly at all, and yet both build well-concealed nests. The two sexes of the common fly-catcher (*Muscicapa grisola*) can hardly be distinguished, whilst the sexes of the pied fly-catcher (*M. luctuosa*) differ considerably, and both build in holes. The female blackbird (*Turdus merula*) differs much, the female ring-ouzel (*T. torquatus*) differs less, and the female common thrush (*T. musicus*) hardly at all from their respective males; yet all build open nests. On the other hand, the not very distantly-allied water-ouzel (*Cinclus aquaticus*) builds a domed nest, and the sexes differ about as much as in the case of the ring-ouzel. The black and red grouse (*Tetrao tetrix* and *T. scoticus*) build open nests, in equally well-concealed spots, but in the one species the sexes differ greatly, and in the other very little." He also points out (vol. ii. p. 199) it is a very strange and unlikely circumstance, if the females have been rendered dull-coloured by the destruction of the brightly-coloured (although all the individuals of the species tend to be bright), that not only the females, but the young males also, are always, or almost always, dull-coloured like their mothers—a quite unaccountable condition.

As to insects, it is well known many butterflies benefit by mimicking other kinds. Now in certain species the females are brilliant mimics, but the males are dull. This seems to conflict with the hypotheses of both Mr. Darwin and Mr. Wallace. For the brilliancy is on the part of the supposed selector according to Mr. Darwin, who admits "it cannot be supposed that the males have been kept dull-coloured by the females rejecting the individuals which were rendered as beautiful as themselves;" nor, as he observes, can we understand how Mr. Wallace's "natural selection" could have kept the males dull, "for it would surely not have been in any way injurious to each individual male to have partaken by inheritance of the protective colours of the female, and thus to have had a better chance of escaping destruction" (vol. i. p. 414). Dragon-flies are very often brilliantly coloured, and the males of some of the *Agrionidæ* are blue, with black wings, while the females are green, with colourless wings. In *Agrion Ramburii*, however, "these colours are exactly reversed in the two sexes." Surely neither Mr. Wallace's nor Mr. Darwin's hypothesis will account for this singular interchange. Certainly it is incredible that females of one species should have persistently preferred such males as happened most to resemble the females of another species!

From the foregoing facts and considerations it seems to follow that we must of necessity admit the action of some internal force. It cannot be pretended that there is any evidence for sexual selection except in the class Birds. Certain of the phenomena which Mr. Darwin generally attributes to such selection must be due to other causes, and there is no *proof* that sexual selection acts, *even* amongst birds.

Need of an internal force.

But in other classes, as we have seen, sexual characters are as marked as they are in the feathered group. Thus, with regard to certain apes, Mr. Darwin himself says, "Several authors have used the strongest expressions in describing these resplendent colours, which they compare with those of the *most brilliant birds*" (vol. ii. p. 293). And yet there are no grounds for believing that female apes select, while there are very strong reasons against a belief in the exercise of any such selective action. Mr. Darwin, indeed, argues that birds select, and assumes that their sexual characters have been produced by such selection, and that, therefore, the sexual characters of beasts have been similarly evolved. But we may turn the argument round, and say that sexual characters not less strongly marked exist in many beasts, reptiles, and insects, which characters cannot be due to sexual selection; that it is, therefore, probable the sexual characters of birds are not due to sexual selection either, but that some unknown internal cause has equally operated in each case. The matter, indeed, stands thus. Of animals possessing sexual characters there are some in which sexual selection cannot have acted; others in which it may possibly have acted; others again in which, according to Mr. Darwin, it has certainly acted. It is a somewhat singular conclusion to deduce from this that sexual selection is the one universal cause of sexual characters when similar effects to those it is supposed to cause take place in its absence.

But, indeed, what are the grounds on which Mr. Darwin builds as regards birds? As before said, they are "display" by the males, their "greater brilliancy and ornamentation," and the "occasional preference" by females in confinement for particular males. What value is there in this foundation for such a superstructure? In the first place, in insects, e.g., butterflies, we have often many brilliant males crowding in pursuit of a single female. Yet, as Mr. Wallace justly observes, "Surely the male who finally obtains the female will be either the most vigorous, or the strongest-winged, or the most patient—the one who tires out or beats off the rest." Similarly in birds strength and perseverance will, no doubt, generally reward the suitor possessing those qualities. Doubtless, also, this will generally be the most beautiful or most melodious; but this will simply be because extra beauty of plumage, or of song, will accompany supereminent vigour of constitution and fulness of vitality. What has been before said as to the fierce combats of cock-birds must be borne in mind.

Its sufficiency.

But that internal spontaneous powers are sufficient to produce all the most varied or bizarre sexual characters which any birds exhibit is actually demonstrated by the class of insects, especially caterpillars, which from their sexless undeveloped state can have nothing to do with the kind of selection Mr. Darwin advocates. Yet amongst caterpillars we not only find some ornamented with spots, bands, stripes, and curious patterns, "perfectly definite in character and of the most brilliantly contrasted hues. We have also many ornamental appendages; beautiful fleshy tubercles or tentacles, hard spines, beautifully coloured hairs arranged in tufts, brushes, starry clusters, or long pencils, and horns on the head and tail, either single or double, pointed or clubbed." Mr. Wallace adds: "Now if all these beautiful and varied ornaments can be produced and rendered constant in each species by some unknown cause quite independent of sexual selection, why cannot the same cause produce the colours and many of the ornaments of perfect insects?" We may also add, the colours and ornaments of all other animals also, including birds?

Mr. Darwin influenced by *à priori* views.

There is, however, another reason determining Mr. Darwin to accept sexual selection; and it is probably this which, in his mind, mainly gives importance to the facts mentioned as to the plumage and motions of birds. He says of "display," "It is incredible that all this display should be purposeless" (vol. ii. p. 399); and again (vol. ii. p. 93), he declares that any one who denies that the female Argus pheasant can appreciate the refined beauty of the plumage of her mate, "will be compelled to admit that the extraordinary attitudes assumed by the male during the act of courtship, by which the wonderful beauty of his plumage is fully displayed, are purposeless; and this is a conclusion which I for one will never admit." It seems then that it is this imaginary necessity of attributing purposelessness to acts which determines him to attribute that peculiar and special purpose to birds' actions which he does attribute to them. But surely this difficulty is a mere chimæra. Let it be granted that the female does not select; yet the display of the male may be useful in supplying the necessary degree of stimulation to her nervous system, and to that of the male. As Mr. Darwin says (p. 275), the lion enraged "tries to make himself as terrible as possible." But he does not know that he is, and therefore does not *intend* to be terrible. Is not this a parallel case to the display of male pheasants? Pleasurable sensation, perhaps very keen in intensity, may thence result to both. There would be no difficulty in suggesting yet other purposes if we were to ascend into higher speculative regions. Mr. Darwin gives us in one place a very remarkable passage; he says:—

An illustration.

> "With respect to female birds feeling a preference for particular males, we must bear in mind that we can judge of choice being exerted only by placing ourselves in imagination in the same position. If an inhabitant of another planet were to behold a number of young rustics at a fair, courting and quarrelling

> over a pretty girl, like birds at one of their places of assemblage, he would be able to infer that she had the power of choice only by observing the eagerness of the wooers to please her, and to display their finery."—vol. ii. p. 122.

Now here it must be observed that, as is often the case, Mr. Darwin assumes the very point in dispute, unless he means by "power of choice" mere freedom of physical power. If he means an internal, mental faculty of choice, then the observer could attribute such power to the girl only if he had reason to attribute to the rustics an intellectual and moral nature similar in kind to that which he possessed himself. Such a similarity of nature Mr. Darwin, of course, does attribute to rational beings and to brutes; but those who do not agree with him in this would require other tests than the presence of ornaments, and the performance of antics and gestures unaccompanied by any evidence of the faculty of articulate speech.

Such, then, is the nature of the evidence on which sexual selection is supposed to rest. To me, the action of sexual selection scarcely seems more than a possibility, the evidence rarely raising it to probability. It cannot be a "sufficient cause" for the phenomena which it is intended to explain, nor can it even claim to be taken as a *vera causa* at all. Yet Mr. Darwin again and again speaks as if its reality and cogency were indisputable.

Uncertainties of the hypothesis.

The uncertainty of the alleged facts asserted in its favour is glaring. Thus Mr. Darwin makes much of the greater number of male Lepidoptera, and yet admits that

> "Mr. Stainton, who has paid such close attention during many years to the smaller moths, informs me that when he collected them in the imago state, he thought that the males were ten times as numerous as the females, but that since he has reared them on a large scale from the caterpillar state, he is convinced that the females are the *most numerous*."—vol. i. p. 310.

Another passage which illustrates the great uncertainty regarding the complex facts considered, is one relating to the action of colour on the safety of woodpeckers, and is full of "possibilities" and "doubts:"—

> "As in several woodpeckers the head of the male is bright crimson, whilst that of the female is plain, it occurred to me that this colour might possibly make the female dangerously conspicuous, whenever she put her head out of the hole containing her nest, and consequently that this colour, in accordance with Mr. Wallace's belief, had been eliminated. This view is strengthened by what Malherbe states with respect to *Indopicus carlotta*; namely, that the young females, like the young males, have some crimson about their heads, but that this colour disappears in the adult female, whilst it is intensified in the adult male. Nevertheless, the following considerations render this view extremely doubtful: the male takes a fair share in incubation, and would be thus far almost equally exposed to danger; both sexes of many species have their heads of an equally bright crimson; in other species the difference between the sexes in the amount of scarlet is so slight that it can hardly make any appreciable difference in the danger incurred; and lastly, the colouring of the head in the two sexes often differs slightly in other ways."—vol. ii. p. 174.

Sexual selection and man.

As to the alleged action of sexual selection on our own species two points may be noticed. Mr. Darwin considers that we owe to it our power of song and our hairlessness of body, and that also to it is due the formation and conservation of the various races and varieties of the human species.

First, as to the absence of hair. This is a character which Mr. Darwin admits cannot be accounted for by "natural selection," because manifestly not beneficial; it is therefore attributed to "sexual selection," incipient man being supposed to have chosen mates with less and less hairy bodies; and the possibility of such action is thought by Mr. Darwin to be supported by the fact that certain monkeys have parts of the body naked. Yet it is a fact that the highest apes have not this posterior nakedness, or have it in a much smaller degree.

As to the races of mankind, Mr. Darwin's theory, indeed, requires the alternation of constancy and caprice to account for the selection first, and subsequently the conservation, of marked varieties. In order that each race may possess and preserve its own ideal standard of beauty, we require the truth of the hypothesis, that "certain tastes may in the course of time become inherited;" and yet Mr. Darwin candidly admits (vol. ii. p. 353), "I know of no evidence in favour of this belief." On the other hand, he says (p. 370), As soon as tribes exposed to different conditions came to vary, "each isolated tribe would form for itself a slightly different standard of beauty," which "would gradually and inevitably be increased to a greater and greater degree." But why have not the numerous tribes of North American Indians diverged from each other more conspicuously, inhabiting, as they do, such different climates, and surrounded by such diverse conditions?

Again, far from each race being bound in the trammels of its own features, all cultivated Europeans, whether Celts, Teutons, or Slaves, agree in admiring the Hellenic ideal as the highest type of human earthly beauty. Nevertheless, this appreciation does not appear to result in such action as is needful to support Mr. Darwin's view that beauty has been developed by the agency of *female* selection. Mr. Darwin (p. 374) says women would generally choose "the handsomer men, according to their standard of taste." But experience shows us (however much men, judging *à priori* by their own sentiments, may naturally be disposed to think the contrary) that beauty is a very small matter in women's eyes, as in the well-known cases of Wilkes and Mirabeau.

Mr. Darwin says (p. 399): "It seems to me almost certain that *if* the individuals of one sex were during a long series of generations to prefer pairing with certain individuals of the other sex, characterized in some peculiar manner, the offspring would slowly but surely become modified in this same manner." There can be little doubt of this; but there is "wonderful virtue in an if."

Moreover, Mr. Darwin tells us that (vol. ii. pp. 350, 351) "Captain Burton, a most experienced observer, believes that a woman whom we consider beautiful is admired throughout the world;" and "Mr. Winwood Reade," whose opportunities of observation have been ample as to negroes, "is convinced that their ideas of beauty are on the whole the same as ours." Whether or not these observers are justified in the strength of their remarks, it cannot be doubted that their evidence demonstrates that the admiration of low types of men for their own race is certainly far from constant and universal.

Secondly, with regard to man's power of song, Mr. Darwin's views are thus expressed: All the facts as to the deep and mysterious emotions and feelings excited by music

> "become to a certain extent intelligible, if we may assume that musical tones and rhythm were used by the half-human progenitors of man, during the season of courtship, when animals of all kinds are excited by the strongest passions. In this case, from the deeply-laid principle of inherited associations, musical tones would be likely to excite in us, in a vague and indefinite manner, the strong emotions of a long-past age. Bearing in mind that the males of some quadrumanous animals have their vocal organs much more developed than in the females, and that one anthropomorphous species pours forth a whole octave of musical notes and may be said to sing, the suspicion does not appear improbable that the progenitors of man, either the males or females, or both sexes, before they had acquired the power of expressing their mutual love in articulate language, endeavoured to charm each other with musical notes and rhythm. So little is known about the use of the voice by the Quadrumana during the season of love, that we have hardly any means of judging whether the habit of singing was first acquired by the male or female progenitors of mankind. Women are generally thought to possess sweeter voices than men, and, as far as this serves as any guide, we may infer that they first acquired musical powers in order to attract the other sex. But if so, this must have occurred long ago, before the progenitors of man had become sufficiently human to treat and value their women merely as useful slaves. The impassioned orator, bard, or musician, when with his varied tones and cadences he excites the strongest emotions in his hearers, little suspects that he uses the same means by which, at an extremely remote period, his half-human ancestors aroused each other's ardent passions, during their mutual courtship and rivalry."—vol. ii. pp. 336, 337.

This seems to be one of the most purely gratuitous of the many degrading suppositions so unscrupulously emitted by Mr. Darwin. There is not the slightest evidence that the lowest savages sing to their loves; and Mr. Wallace assures us that they never choose their wives for their voices, but for health and physical beauty. But Mr. Darwin's theory not only does not account for, but positively conflicts with the facts. Music is capable of producing the most noble and lofty emotions, and especially harmonizes with and gratifies the religious instincts. Were his theory correct, it would be rather the most sensual and brutal instincts to which music should minister.

Mr. Francis Galton's view.

While considering the question of sexual selection, it may be worth while to note in passing some passages of Mr. Darwin's writing which conflict with the view maintained by Mr. Francis Galton with respect to the injury inflicted on society by the abstinence from marriage of individuals who have devoted their lives to the practice and propagation of beneficence. He says:[*]—

> "Admitting for the moment that virtuous tendencies are inherited, it appears probable, at least in such cases as chastity, temperance, humanity to animals, &c., that they become first impressed on the mental organization through habit, instruction, and example, continued during several generations in the same family, and in a *quite subordinate degree*, or *not at all*, by the individuals possessing such virtues, having succeeded best in the struggle for life. My chief source of doubt with respect to any such inheritance, is that senseless customs, superstitions, and tastes, such as the horror of a Hindoo for unclean food, ought on the same principle to be transmitted.
>
> "Although this in itself is perhaps not less probable than that animals should acquire inherited tastes for certain kinds of food or fear of certain foes, I have not met with any evidence in support of the transmission of superstitious customs or senseless habits."

This is an important admission indeed! Again he tells us:[†]—

> "A man who was not impelled by any deep, instinctive feeling, to sacrifice his life for the good of others, yet was roused to such actions by a sense of glory, would by his example excite the same wish for glory in other men, and would strengthen by exercise the noble feeling of admiration.
>
> "He might thus do *far more good to his tribe* than by begetting offspring with a tendency to inherit his own high character."

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[*] 'Descent of Man,' vol. i. p. 102.

[†] *Op. cit.* p. 165.

Also :*—

> "Great lawgivers, the founders of beneficent religions, great philosophers and discoverers in science, aid the progress of mankind in a far higher degree by their *works* than by leaving a numerous progeny."

Finally, he adds :†—

> "The Western nations of Europe, who now so immeasurably surpass their former savage progenitors, and stand at the summit of civilisation, owe little or none of their superiority to direct inheritance from the old Greeks; though they owe much to the written works of this wonderful people."

Mr. Darwin's style.

As in considering "Natural Selection" we felt bound to call attention to Mr. Darwin's dogmatic style, so calculated to overbear and unduly impress the minds of those readers who from their want of special knowledge ought to be most upon their guard, so here we are compelled to call attention to analogous confident assertions and misleading assumptions of the very positions about which Mr. Darwin is at the same time arguing.

Thus, speaking of certain birds in which the females are the more remarkable, he attributes the fact to "the females having become the more eager in courtship, the males remaining comparatively passive, but apparently selecting, *as we may infer from the results,* the more attractive females. Certain females *have* thus been rendered more highly coloured or otherwise ornamented, as well as more powerful and pugnacious than the males, these characters being transmitted to the female offspring alone" (vol. i. p. 276).

In vol. ii. p. 15, he remarks: "If we *may assume* that female fishes have the power of exerting a choice, and of selecting the more highly ornamented males, the facts become intelligible through the principle of sexual selection." No doubt, if we may assume a fact for which there is not a tittle of evidence, but which, as we have seen, is abundantly contradicted by what evidence there is, it is difficult to say what might *not* be explained by a series of parallel assump-

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[*] *Op. cit.* p. 172.

[†] *Op. cit.* p. 178.

tions. Again (p. 141) he says: "Many female progenitors of the peacock *must*, during a long line of descent, have appreciated this superiority; for they *have* unconsciously, by the continued preference of the most beautiful males, rendered the peacock the most splendid of living birds."

He also remarks (p. 262): "The females are most excited by, or prefer pairing with the more *ornamented* males, or those which are the best songsters, or play the best antics." But do they do so? That they have preferences is likely enough, but that such preferences are determined as Mr. Darwin says they are, is the very thing to be proved, and against which we have cited (e.g., Sir R. Heron's peacocks) rebutting evidence. Again, at p. 37, vol. ii. he says: "On the whole we may conclude with tolerable safety that the beautiful colours of many lizards, as well as various appendages and other strange modifications of structure, *have been gained* by the males through sexual selection for the sake of ornament, and *have been transmitted* either to their male offspring alone or to both sexes."

Once more, as to the stridulating organs of insects, he says: "No one who admits the agency of natural selection, will dispute that these musical instruments have been acquired through sexual selection." Speaking of the peculiarities of humming-birds and pigeons, Mr. Darwin observes, "The *sole* difference between these cases is, that in one the result is due to man's selection, whilst in the other, as with humming-birds, birds of paradise, &c., it is due to sexual selection,—that is, to the selection by the females of the more beautiful males" (vol. ii. p. 78). Of birds, the males of which are brilliant, but the hens only slightly so, he remarks: "These cases *are almost certainly* due to characters primarily acquired by the male, having been transferred, in a greater or less degree, to the female" (vol. ii. p. 128). "The colours of the males may *safely* be attributed to sexual selection" (vol. ii. p. 194). As to certain species of birds in which the males alone are black, we are told "there can *hardly be a doubt*, that blackness in these cases has been a sexually selected character" (vol. ii. p. 226). The following, again, is far too positive a statement:—"Other characters proper to the males of the lower animals, such as bright colours and various ornaments, *have been* acquired by the more attractive males having been preferred by the females. There are, however, exceptional cases, in which the males, instead of having been selected, *have been* the selectors" (vol. ii. p. 371). He also affirms (p. 191): "Hardly any fact in nature *shows* us more clearly how subordinate in importance is the direct action of the conditions of life, in comparison with the accumulation through *selection* of *indefinite* variations, than sexual differences of birds." Again, at p. 226 he says: "Some species which are *manifestly* coloured for the sake of protection" "are likewise marked and shaded, according to our standard of taste, with extreme elegance. In such cases we *may conclude* that both natural and sexual selection have acted conjointly for protection and ornament." As to monkey tufts being acquired as ornaments, Mr. Darwin adds (p. 286): "If this view is correct there *can* be *little doubt* that they have been acquired, or at least modified, through sexual selection." Lastly he says (p. 314): "When the colours are diversified and strongly pronounced, when they are not developed until near maturity, and when they are lost after emasculation, we *can hardly avoid the conclusion* that they have been acquired through sexual selection."

Ancillary hypotheses needed.

To this catalogue of expressions, both too reiterated and too confident, may be added an enumeration of the more or less gratuitous hypotheses introduced to support the figment of "sexual selection." Thus to account for the songs of birds in a state of widowhood we have (vol. ii. p. 54), 1st, the hypothesis that "the feeding of such birds in confinement disturbs the reproductive functions." 2nd, "Singing is one of the functions capable of being so disturbed." To account for the loud voices of many male birds we have, 3rd, "the strong voices produced by passion may be inherited." 4th (p. 154), we have the hypothesis of sexual transmission of variations.

5th (p. 218), "that an ancient style of plumage, partially modified through the transference of some characters from the summer plumage, has been retained by the adults during the winter." 6th (p. 220), to account for the young of two species of humming-birds of Juan Fernandez, we have the following hypothetical suggestion: "If, then, *we might assume* that during *some former* lengthened period the males of the Juan Fernandez species had greatly exceeded the females in number; but that during *another* lengthened period the females had greatly exceeded the males, we could understand how the males at one time, and the females at another time, might have been rendered beautiful by the selection of the brighter-coloured individuals of either sex; both sexes transmitting their characters to their young at a rather earlier age than usual." 7th (p. 337), that "the varied tones and cadences" of the "impassioned orator, bard, or musician," are the development of the inarticulate cries of brutes. 8th, This last idea reposes on yet another hypothesis, namely, that apes may have developed their more extraordinary vocal organs in connection with the sexual instinct, and this in spite of Mr. Darwin's own admission that "little is known about the use of the voice in the Quadrumana during the season of love." 9th (a second hypothesis ancillary to the seventh hypothesis), that "musical tones and rhythm were used by the half-human progenitors of man during the season of courtship." 10th (a third hypothesis ancillary to the seventh hypothesis), that if strong sexual emotions become connected with musical tones in certain animals, then these same tones may become connected with quite other emotions in their descendants. 11th (p. 370), that races of men separating into tribes, each isolated tribe would form for itself a different standard of beauty. 12th, and lastly, "that certain tastes as to beauty may in the course of time become inherited."

Now there is no intention here of asserting that none of these hypotheses are true, but certainly a theory which requires so many hypothetical props can hardly be deemed itself to have a very secure foundation. In fact, reviewing what has been said in preceding chapters, I am confident in the belief, and I think it can be fully proved:—

Conclusion as to sexual selection.

1. That it is evident, on strictly scientific grounds, that Mr. Darwin's hypothesis, sexual selection (the action of which he now exaggerates as he formerly exaggerated that of natural selection, according to his own present admission), cannot be maintained, and refutes itself.

2. That the opposition to Mr. Darwin's hypothesis of sexual selection will be (like that to natural selection has been) due to this exaggeration, i.e., to the representation of it as a main cause instead of a merely subordinate aid.

3. That Mr. Darwin utterly misses the point concerning the real difficulty as to man's origin through evolution, and consequently does not even tend, in the faintest degree, to surmount the moral barrier separating man from brutes.

I am also persuaded that the failure of Mr. Darwin and his coadjutors in their attempt to establish a mechanical explanation of the phenomena of the living world amounts almost to a demonstration of the impossibility of any such explanation, and therefore that essentially distinct vital powers and principles really exist in nature.

Such powers may, I believe, be made evident to every unprejudiced mind who studies the world of men, of animals, and of plants—the world of Biology.

This is the lesson which nature seems to me to teach us as to the processes of life in the living beings we see about us. It remains to consider what, if anything, can be learned from nature as to its own *causes.*

CHAPTER XI.

AN EPISODE.

"Mr. Chauncey Wright's criticism of the author's views having been republished and widely circulated by Mr. Darwin, the reply to that criticism is here reproduced."

A digression induced by special circumstances.

THE subjects of natural and sexual selection having been treated of, that which should come next (the question as to causes) would be immediately entered upon, but that exceptional circumstances induce a digression which may have the effect of confirming and substantiating views put forward in the last two chapters. These circumstances are: (1) The publication in the 'North American Review,' for July 1871, of an elaborate criticism of the 'Genesis of Species,' by a distinguished writer of the United States, Mr. Chauncey Wright; (2) The fact that Mr. Darwin has had this criticism republished in England and very extensively circulated, a copy having been sent to almost every known naturalist in the British Isles or abroad.

By the courtesy of the editor of the 'North American Review,' I was enabled to publish a reply to Mr. Chauncey Wright's criticism in the form of a letter at the end of the 235th number of that Review, that for April 1872. Nevertheless, the diffusion of that reply must necessarily have been much less than the diffusion of the criticism in its original and its republished form. On this account I think it well to reproduce it here; but there are also other reasons which determine me to do so. (1) Mr. Darwin must have thought Mr. Chauncey Wright's defence of him extremely important, to have taken the steps he did in reference to it. It cannot therefore but be interesting to many to see the sort of defensive arguments upon which Mr. Darwin relies. (2) I attach a very special value to the opinions formed in the United States. I do so on account of the warm esteem I feel for Americans I have had the good fortune to meet, and because I look forward to most important philosophical progress through the people of the United States. I am therefore anxious that my reply to the one hostile critic I have there found should be as widely diffused as possible.

May be passed over without detriment to the general argument.

At the same time this republication necessarily entails considerable repetition, both of remarks and quotations, and on this account this chapter may be passed over by any of my readers without detriment to the course of the argument followed out in the other chapters. Only such persons need read it as are interested in the Darwinian controversy, or who feel yet undecided as to "natural selection," or who are curious to consider the points raised by Mr. Darwin's "selected" champion.

My reply was as follows:—

Mr. Chauncey Wright's criticism.

"The rapid growth of physical science and the constant publication of ever-new observations, make such demands on the time of naturalists, that an author actively engaged upon a subject covering the whole field of biology cannot be expected to reply directly to critics, unless under very exceptional circumstances.

"I have to thank Mr. Chauncey Wright for having been so obliging as to devote much space, and necessarily a considerable portion of his valuable time, to an examination of my recent work, the 'Genesis of Species.' Nevertheless I must confess that, with all respect for his conspicuous talents and for his deserved reputation, I should not have undertaken the following few words of explanation but for his paper's wide circulation in England and elsewhere by Mr. Darwin.

"Mr. Wright's criticism touches upon so many matters of detail, that it is not altogether easy to ascertain his main objects. Having, however, considered his remarks with that care which my esteem for his opinions makes incumbent on me, I venture to express my belief that, neglecting minor matters, his criticism is mainly directed to the assertion of two points.

Mainly addressed to two points.

"One of these is, that I have misrepresented Mr. Darwin's views, and have been guilty of involuntary injustice with respect to the natural forces which, according to our great naturalist, have determined specific forms.

"The other is, that I have attributed an irreligious tendency to Mr. Darwin's writings which they do not, in fact, possess; and that this is in part owing to my defective knowledge, in part to early prejudices.

"Thus Mr. Wright speaks of my 'theological education' and my 'schooling against Democritus.' It is a matter of wonder to me who could have so misled Mr. Wright. Though reluctant, in the extreme, to obtrude such private and personal matters on the public, I must nevertheless, in justice, observe, that my schooling has been of the very opposite character, and perfectly in unison with that which Mr. Darwin himself would favour. Only at length, and with difficulty, have I struggled out of that philosophy of 'nescience,' the evils and the fallacies of which are so apparent to me because, at one time, its doctrines so completely possessed my assent.

The first of these.

"With regard to Mr. Darwin's theory of the origin of species, I should hasten eagerly to acknowledge my error if I had been guilty of injustice with respect to it, and also to thank any critic who had been so kind as to call my attention to such unintentional unfairness. I must confess, however, that I cannot detect that misrepresentation in my 'Genesis of Species' which Mr. Wright seems to there discover.

"In common with so many others, I was, at one time, a hearty and thorough-going disciple of Mr. Darwin, and I accepted from him the view that Natural Selection was '*the* origin of species.' It was only by degrees, and through the evidence of a multitude of biological facts, that an opposite conclusion was gradually forced upon me. Having come to that conclusion, on scientific grounds only, after careful reconsideration of those grounds and much discussion of the subject, I ventured to publish my 'Genesis of Species.' Therein I endeavoured to bring before the public the leading facts which had produced the conviction in my own mind that Natural Selection was *not* the origin of species, *not* the main determining agent in the fixation of specific characters; although I allowed that it played, and necessarily must play, a certain subordinate part.

"This conviction had forced itself on many minds before the publication of my book, and since then has approved itself to the minds of many more. Indeed, Mr. Darwin himself seems to have come round substantially, though not avowedly, to the same opinion, and has, in his 'Descent of Man,' implicitly admitted, though he has not yet explicitly declared, that Natural Selection is *not* the origin of species. I cannot but confess that it appears to me even Mr. Chauncey Wright himself concedes all that for which I contend, though he at the same time seems to imagine that he asserts the validity of Mr. Darwin's original position.

"No one could be less disposed than I am to detract from the great merit unquestionably due to Mr. Darwin, or to ignore the vast impetus which his views have given to the wide reception of the doctrine of evolution. Nevertheless, we must not allow our just admiration for the zeal and genius of Mr. Darwin to blind our eyes to two facts. One of these is that an important part of Mr. Darwin's theory was not new, but, on the contrary, very old. The other is, that though the *popular* acceptance of evolution has been brought about through him, yet that the minds of *scientific* men were well prepared for, and disposed towards, evolution years before the appearance of 'The Origin of Species.'

"Biological facts, by their gradual accumulation, had long been predisposing scientific minds to the acceptance of this theory. I myself, indeed, fully accepted it, and I found that a similar acceptance existed in the minds of others, notably in that of Professor Owen. Mr. Wright, therefore, is certainly correct in this sense when he says that 'it is not to what is now known as "Darwinism" that the prevalence of the doctrine of evolution is to be attributed, or indirectly assigned.' The part of Mr. Darwin's theory which is old is that which attributes so much importance to the destructive powers of nature, a view advocated by Lucretius and treated of by Aristotle in the passage quoted in my book.

"What, however, was unquestionably Mr. Darwin's own, was the remarkable conception that this exterminating power, acting upon organisms presenting slight variations, so overbore all other influences as to occasion the survival of the fittest variations, and in this way (by a process of cutting off and limiting) fixed the characters of the different organic species, thus becoming their origin. *The* origin, not, of course, of the slight variations, but of the fixing of these in definite lines and grooves.

"Gradually, however, the arguments of opponents have forced upon Mr. Darwin's active mind modifications of his views, till, as I have said, he has come to admit in principle that Natural Selection is not *the* origin of species. I cannot myself see that there is, in this change of view, anything at all derogatory to Mr. Darwin; and for my part, my esteem is strengthened rather than weakened when I read candid admissions of antecedent error. These admissions should not be brought forward, save when an unscientific appeal is made to his *authority*, or when an advocate more zealous than judicious attempts to deny that Mr. Darwin's opinions have undergone any grave modifications. Then indeed truth and justice demand the production of such admissions. They do so since the assignment of the law of Natural Selection to a *subordinate* place is *manifestly* an abandonment of the Darwinian theory as originally proposed; for how can that be said to be *the origin* of species which only co-operates, in an inferior and comparatively uninfluential manner, in determining that origin?

"Mr. Chauncey Wright's remarks seem to me then to render necessary a reference to the earlier statements of Mr.

Darwin. A number of such statements*—not, indeed, his earliest, but from the *third* edition of 'The Origin of Species' —were brought forward in the July number of the 'Quarterly Review.' They were published for the purpose of guarding the public from a hasty acceptance of Mr. Darwin's dogmatic expressions, merely in deference to his *authority*, and without a careful estimate of the value of the facts brought forward by him.

"The passages referred to, seem to me to contain statements amply sufficient to repel Mr. Wright's charge against me of injustice to Mr. Darwin, and to show, on the one hand, that the original theory of the origin of species was such as I have represented it to have been; and, on the other, that Mr. Darwin has, in fact, abandoned the position which he originally took up.

"We have, however, yet more explicit declarations as to the occurrence of characters for which not only his theory will not account, but which, in his own words, annihilate his theory. He has told us in 'The Origin of Species' that this fatal consequence would ensue from the discovery of characters not produced by slight *beneficial* modifications, and yet we now read:—

> "'No doubt man, as well as every other animal, presents structures which, as far as we can judge with our little knowledge, are not now of any service to him, nor have been so during any former period of his existence, either in relation to his general conditions of life, or of one sex to the other. Such structures cannot be accounted for by any form of selection, or by the inherited effects of the use and disuse of parts.'

"Besides all this, in the fifth edition of 'The Origin of Species,' p. 104, we find the following significant passage:—

> "'Until reading an able and valuable article in the 'North British Review' (1867), I did not appreciate how rarely simple variations, whether slightly or strongly marked, could be perpetuated.'

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* "These are to be found in 'The Origin of Species,' 3rd edition, pp. 208, 214, 220, 223; 5th edition, p. 104. The Descent of Man,' vol. i. pp. 125, 152, 154, 223; vol. ii. pp. 176, 198, 387, and the postscript at the beginning of the volume. 'Animals and Plants under Domestication,' vol. ii. p. 57.

"Finally, Mr. Darwin recognises that he was formerly 'inclined to lay too much stress on the principle of protection, as accounting for the less bright colours of female birds,' and speaks now as if what he at one time favoured in this respect was quite an unlikely matter, saying:—

> "'Is it probable that the head of the female chaffinch, the crimson on the breast of the female bullfinch, the green of the female chaffinch, the crest of the female golden-crested wren, have all been rendered less bright by the slow process of selection for the sake of protection? *I cannot think so.*'

"I *also* cannot think so, nor can I so think with regard to those numerous instances brought forward in my book as examples of characters for the origin and development of which Natural Selection will not, I believe, account.

"Deference ought doubtless to be shown to a naturalist such as Mr. Darwin, but deference has its limits and must not be exercised to the sacrifice of truth, and truth compels the recognition of the important modifications above noticed. It is not only, however, critics that dissent from Mr. Darwin's views who recognise the existence of these changes. Mr. Darwin's authorized interpreter, Professor Huxley, has lately told us the highly significant fact that Mr. Darwin is even inclined to reply in the affirmative to the question whether a variety 'can be perpetuated, or even *intensified,* when selective conditions are indifferent, or perhaps *unfavourable* to its *existence.*' A more complete repudiation in principle of the origin of species by Natural Selection it would be difficult if not impossible to imagine.

"Mr. Darwin has not, however, so far as I know, explicitly declared what Professor Huxley tells us he is inclined to admit. He has certainly made many important and significant admissions, but there is one more which consistency seems to demand as the logical outcome of others above cited: I mean the admission that the attribution to Natural Selection of the main determining office in the fixation of specific characters has also been 'a serious error,' whether it be not rather a fortunate than an 'unfortunate' one.

"Mr. Wright challenges the production of a sudden adaptive modification of a race, wild or domesticated, 'not referable by known physiological laws to the past history of the race on the theory of evolution.' In this statement I must in the first place object to the introduction of the words 'on the theory of evolution,' as that theory, far from being opposed, is, on the contrary, adopted and contended for by me, and I do not understand how Mr. Wright can have inserted them unless by inadvertence. Instances, however, of modifications, the production of which he desiderates, can readily be supplied. Thus the Cashmere sheep, when transferred to Europe, lost their long wool in a few generations, and this could not possibly have been due to Natural Selection. Again, the marine animals now living in Swedish lakes have become remarkably transformed, and the instance noticed by Mr. Darwin as to the Mediterranean oyster, though not evidently adaptive, is probably so, and if so would be in point. There was however no need to bring such cases forward, for surely it was fair to take Mr. Darwin's own estimate of what facts *he* would consider fatal, and such facts I claim to have brought forward, in sufficient number, in my book. I can only express my profound regret that I should be so unfortunate as to seem to Mr. Chauncey Wright to have made an 'unfathomable translation' of the theory of Natural Selection. Mr. Darwin nowhere himself says, with Mr. Wright, that the 'slightness' of the variations he speaks of 'is only relative to the differences between the characters of the species;' and I cannot but think Mr. Wright himself misconceives Mr. Darwin's meaning, for I believe the latter gentleman would not speak of the sudden development of a large proboscis, like that of *Semnopithecus nasalis*, as a 'slight' variation.

Sudden adaptive modifications.

"An admission which Mr. Darwin makes, and which I considered and consider to be important, is sought to be explained away by Mr. Chauncey Wright in a mode I cannot think permissible. He tells us that when Mr. Darwin says that the goose 'seems to have a sin-

Improper interpretations.

gularly *inflexible* organization,' Mr. Darwin's '*obvious* meaning' is 'that the goose *has been much less changed by domestication* than other domestic birds.' Certainly if Mr. Darwin had meant this, he would not have used the word 'inflexible,' but 'unmodified,' 'inflexed,' or some equivalent expression. To have a 'singularly inflexible organization' is to have one which *cannot* without great difficulty be modified, not one which, as a fact, *has* not been modified.

"Similarly where Mr. Darwin speaks of 'a whole organism having become plastic and *tending* to depart from the parental type,' Mr. Wright asserts that Mr. Darwin means 'capable of being moulded, or fashioned to the purpose, as clay.' This is to credit Mr. Darwin with the enunciation of a truism which I am sure he would never have written. The words 'tends to depart'* are plainly a repetition and explanation of the epithet 'plastic,' and fix its meaning. Mr. Darwin here evidently predicates an existing predisposition, and not a mere state of indifference. By '*tends* to depart' he cannot mean 'capable of being made to depart,' for that would not indicate any influence which has effected the 'whole organization,' as by his hypothesis every organism is 'capable' of being modified.

Mr. Wright's second point.

"I will now turn to the second matter of argument, that in which Mr. Chauncey Wright treats of the alleged possibly irreligious tendencies of Mr. Darwin's theory, and of my incompetency in physics and ignorance of the experimental philosophy.

"He says:—

"'Mr. Mivart has made the mistake, which nullifies nearly the whole of his criticism, of supposing that "the theory of Natural Selection may (though it need not) be taken in such a way as to lead men to regard the present organic world as formed, so to speak, *accidentally*, beautiful and wonderful as is confessedly the haphazard result" (p. 33). Mr. Mivart, like many another writer, seems to forget the age of the world in which he lives and for which he writes—the age of "experimental philosophy," the very standpoint of which, its fundamental assumption, is the universality of physical causation. This is so familiar to minds bred in physical studies, that they rarely imagine that they may be mistaken for disciples of Democritus, or for believers in "the fortuitous concourse of atoms," in the sense, at least, which theology has attached to the phrase.'

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* "The omission of the words 'in a slight degree' in my book was purely accidental. As, however, the question is one of *principle*, I do not see that the omission was of any importance.

"I feel a little difficulty in replying to this criticism, because I cannot bring myself to attribute to Mr. Wright such a misapprehension either of my meaning or of that of the school of Democritus as seems necessary to explain it.

"I would willingly suppose that an obscurity of expression on my part is alone to blame; but in using the word 'accidentally' I qualified it by the prefix 'so to speak.' But even had I not done so, I could not have imagined that any one would think me unaware that the various phenomena which we observe in nature have their respective phenomenal antecedents. It is extremely difficult to me to think that Mr. Wright can suppose I held the opinion that the phenomena of variation, &c., are not determined by definite physical antecedents. Yet, if he does not so suppose, how can he assert that when I use the expression 'accidentally' I mean anything antagonistic to physical causation?

"On the other hand, Mr. Wright cannot suppose that the old atheistic philosophy held events to be accidental in the strict sense, for he knows very well that Democritus and Empedocles and their school no more held phenomena to be undetermined or unpreceded by other phenomena than do their successors at the present day.

Design and accident.

"My meaning, which I rashly imagined plain enough, was that Mr. Darwin's theory might be so taken as to oppose the conception of *design* in the same way as the old Ionian theory opposed that conception. That I was fully justified in expressing such an opinion is, I conceive, plain, from the language employed by Mr. Darwin himself. In his work on Animals and Plants under Domestication, Mr. Darwin considers the building of an edifice from broken fragments of rock, and makes use even of strong expressions of the kind referred to. He says:—

"'In regard to the use to which the fragments may be put, their shape may STRICTLY be said to be *accidental*. . . . If the various laws which have determined the shape of each fragment were not predetermined for the builder's sake, can it with any greater probability be maintained that He specially ordained, for the sake of the breeder, each of the innumerable variations in our domestic animals and plants? . . . . But, if we give up the principle in one case—if we do not admit that the variations of the primeval dog were intentionally guided, in order that the greyhound, for instance, that perfect image of symmetry and vigour, might be formed—no shadow of reason can be assigned for the belief that the variations, alike in nature, and the result of the same general laws, which have been the groundwork through Natural Selection of the formation of the most perfectly adapted animals in the world, MAN INCLUDED, were intentionally and specially guided. However much we may wish it, *we can hardly follow* Professor Asa Gray in his belief that "variation has been led along certain beneficial lines," like a stream "along definite and useful lines of irrigation."'

"Not only then may the organic world, on the Darwinian theory, be conceived as formed in some sense *accidentally*, but we have Mr. Darwin's own words for viewing that formation as 'STRICTLY ACCIDENTAL.' I say 'his *words*,' because I am far from desiring to bind Mr. Darwin in anti-teleological fetters. I have carefully given him credit for every theistic expression I noticed, as it was at once my duty and my pleasure to do.

"Here I take the opportunity of acknowledging, as I have also done in my second edition, that an American naturalist—Professor Theophilus Parsons, of Harvard University—put forth, more than ten years ago, views* very similar to those I enunciated in my 'Genesis of Species,' though they were of course unknown to me when I published my first edition. Mr. Wright, however, is mistaken when he states that I am 'indebted to Mr. Galton' for my conception of specific genesis, although I made use, with due acknowledgment, of that gentleman's illustration of a conception analogous to mine.

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* "See the July number of the 'American Journal of Science and Art' for 1860.

"Mr. Wright has been so unfortunate as to misapprehend Mr. Murphy also. Speaking of spheres and crystals, that gentleman is quoted as saying:— Misapprehensions.

> "'Attraction, whether gravitative or capillary, produces the spherical form; the spherical form does not produce attraction.'

"Upon this Mr. Wright remarks:—

> "'No abstraction ever produced any other abstraction, much less a concrete thing. The abstract laws of attraction never produced any body, spherical or polyhedral.'

"But really not only has Mr. Murphy not said *they did*, but his very expression Mr. Wright will, I am sure, regret to see, has been changed by my critic; and the result is, that Mr. Murphy is unlucky enough to be blamed for what he never said, or apparently thought of saying. This is all the more hard because Mr. Wright goes on to observe, 'it was actual forces acting in definite ways that made the sphere or crystal,' which is precisely what Mr. Murphy himself said.

"Mr. Wright goes on to make a statement which I confess is utterly beyond me. He says:—

> "'Moreover, in the case of crystals, neither these forces nor the abstract law of their action in producing definite crystals reside in the finished bodies, but in the properties of the surrounding media, portions of whose constituents are changed into crystals, according to these properties and to other conditioning circumstances.'

"If this is so, then when a broken crystal completes itself, the determining forces reside exclusively in the media, and not at all in the crystal with its broken surface! The first atoms of a crystal deposited arrange themselves entirely according to the forces of the surrounding media, and their own properties are utterly without influence or effect in the result!

"To my mind, I confess, it would appear manifest that those marvellously delicate and complex ice mosses, which at this season occasionally fringe our walls and palings, are not due to forces residing in the atmosphere *only*, but also in the crystalline particles already deposited and in course of deposition.

"Professor Tyndall's teaching differs widely from that of Mr. Chauncey Wright. Speaking of the formation of pyramidal crystals of salt, he says:—

"'The scientific idea is that the *molecules* act upon *each other*, ... that they attract each other and repel each other at certain definite points or poles, and in certain definite directions, and that the pyramidal form is the result of this play of attraction and repulsion.'*

"Mr. Wright seeks to refute the parallelism asserted by Mr. Murphy and by me to exist between crystals and organisms, saying:—

"'In organisms no doubt, as we may be readily convinced without resort to analogy, there is a great deal that is really innate, or dependent on actions in the organism, which diversities of external conditions modify very little, or affect at least in a very indeterminate manner, so far as observation has yet ascertained.'

"Here Mr. Murphy and I are fortunately at liberty to invoke in our favour the authority, once more, of Professor Tyndall, who can hardly be deemed even by Mr. Chauncey Wright as incompetent in 'experimental philosophy,' or as likely to forget 'the age of the world in which he lives.' In the little work already quoted, he tells us:†—

"'This tendency on the part of matter to organize itself, to grow into shape, to assume definite forms in obedience to the definite action of force, is, as I have said, all-pervading. It is on the ground on which you tread, in the water you drink, in the air you breathe. Incipient life, as it were, manifests itself throughout the whole of what we call inorganic nature.'

"Speaking of a living grain of corn, and comparing it with a crystal, he tells us we are bound 'to conclude that the molecules of the corn are self-posited by the forces with which they act upon each other. It would be *poor philosophy* to invoke an external agent in the one case and to *reject* it in the other.'

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* "'Essays on the Use and Limit of the Imagination in Science,' 2nd edition, 1871, p. 57.

"Ibid. p. 58.

"Mr. Wright, however, as I have shown, invokes what is innate in the case of organisms and rejects it in the case of crystals, and asserts that in organisms what is innate is so predominant in its action that external conditions '*modify*' them '*very little.*'

Innate force.

"Passing over how important an admission this is against any effective action of Natural Selection, let us see how it tells against the analogy maintained.

"Is not the innate force, as existing in each organism, that which has been educed by antecedent combinations and conditions, just as much and no more external to it than are the forces of the medium to each atom of a crystal? And how does this tell in the least against the analogy which has been asserted, and which really does exist between each chemical unit and each organic unit? Not of course that it is for a moment contended that there is not, as common observation tells us there is, a distinct power and principle 'vitality,' in the one which is wanting in the other, as well as more or less complexity of organization.

"Again, we are told, as to organisms, 'external conditions are, nevertheless, essential factors in development, as well as in mere increase of growth. No animal or plant is developed, nor do its developments acquire any growth, without very special external conditions.' Surely I hardly needed to be solemnly informed of so very elementary a truth.

"Regarding the rules of the 'inductive philosophy,' Mr. Wright remarks:—

> "'A stricter observance of these by Mr. Murphy and our author might have saved them from the mistake we have noticed, and from many others—the "realism" of ascribing efficacy to an abstraction, making attraction and polarity produce structures and forms independently of the products and of the concrete matters and forces in them.'

The "inductive philosophy."

"In whom, or in what? and what are attraction and polarity, if *they* be not forces? Who ever considered them as acting independently of themselves? Would Mr. Wright prefer that the earth's orbit should be spoken of not as the resultant of gravity and centrifugal force, but as produced by 'coming together' and 'flying away'? I have, of course, no objection to that mode of expression, but I see no special advantage in it warranting such a departure from usage. It is singular that Mr. Wright himself, on the next page, employs the very 'abstractions' he blames others for making use of. He there quotes approvingly the expressions 'impenetrability,' 'mobility,' and 'impulsive force of bodies,' and says 'that gravity does really exist and act according to' its laws. It is difficult to see the greater sin in speaking of the 'real existence' of polarity than of 'gravity.' Not only, however, does Mr. Wright quote such expressions, but he uses them himself with the greatest freedom and without scruple whenever they suit his purpose. Thus he tells us 'that *variability* and *selection* do really exist and *act*,' which appear to me quite as much abstractions as polarity or attraction.

Mr. Wright on "intellectual genius."

"Mr. Wright divides 'intellectual genius' into three classes: No. 1, 'that which pursues successfully the researches for unknown causes by the skilful use of hypothesis and experiment;' No. 2, 'that which, avoiding the use of hypotheses and preconceptions altogether, and the delusive influence of names, brings together in clear connections and contrasts in classification the objects of nature in their broadest and realest relations of resemblance;' and No. 3, 'that which seeks with success for reasons and authorities in support of cherished convictions.'

"I might remark on the purely arbitrary character of this classification. But letting this pass, it must be said that class No. 1 is but a poor monster without No. 2; and that No. 1 is frequently, consciously or unconsciously, also No. 3, nor would it be difficult to bring forward an example.

"A more real distinction is that to be drawn between the 'scientific' and the 'philosophical' habits of mind, and under these two great genera come subordinate distinctions of different degrees of importance. Now a naturalist may attain great scientific eminence without being anything of a philosopher, and similarly a philosopher need have little acquaintance with physical science, but from the nature of their respective pursuits a different character of mind tends to be developed. It is from this distinction that we find (as we might *à priori* expect to be the case) such breadth of view, freedom of handling, and flexibility of mind on the part of philosophers who are not naturalists as compared with men great in physical science, who are not at the same time philosophers; a certain rigidity and narrowness seeming to result from the exercise of the mind merely in the arena of physics.

The giraffe's neck.

"Passing to details of criticism, Mr. Wright proceeds to consider the question of the giraffe's neck, and I am asked a rather startling question: 'Can Mr. Mivart suppose that, having fairly called in question the importance of the high-feeding use of the giraffe's neck, he has thereby *destroyed the utility of the neck altogether*, not only to the theory of Natural Selection, but also *to the animal itself?*' At the first glance this looks as if I had brought myself within the grasp of the Society for the Prevention of Cruelty to Animals. But I may, perhaps, be permitted to ask, in return, can Mr. Wright suppose that I ever dreamed that the structures of animals are not useful to them, or that my position is an altogether anti-teleological one? Apparently possessed with some such idea, Mr. Wright proceeds to exhibit the giraffe's neck in the character of a 'watch-tower.' But this leaves the question just where it was before. Of course I concede most readily and fully that it *is* a most admirable watch-tower, as it also *is* a most admirable high-reaching organ, but this tells us nothing of its *origin*. In both cases the long neck is most useful *when you have got it*: but the question is how it *arose*, and in this species *alone*. And similar and as convincing arguments could be brought against the watch-tower theory of origin as against the high-reaching theory, and not only this, but also against every other theory which could possibly be adduced.

"In reply to my objection as to different rate of increase of strength and mass as the animal increases in size by the supposed transformation, Mr. Wright remarks, that 'the neck may have grown at the expense of the hind parts in the ancestors of the giraffe;' and adds, 'if we met with a man with a longer neck than usual, we should not expect to find him heavier, or relatively weaker, or requiring more food on that account.' I reply, that if we should not do so it would only be from ignorance; for if, *cæteris paribus*, a man's neck was a quarter of an inch longer, he would *necessarily* and *inevitably* be heavier, less strong, and requiring more food, minute though the differences in these respects might be.

An advantage possessed by Mr. Darwin's theory which does not properly belong to it.

"In considering criticisms on Mr. Darwin's theory drawn from animal structures we must not forget how very great an advantage Mr. Darwin has. He has devised a theory according to which any possible utility of any organ is enough to account for its formation. It is amazing, then, that anything whatever should be found for which his theory does not readily account. Much wonder and admiration with regard to that theory has been expressed, because of the way it accounts for so many phenomena, forgetting that this is the necessary consequence of the standpoint he has taken up. Let us suppose, for argument's sake, that the theory is utterly wrong; yet, let but the world be preponderatingly governed by intelligence and beneficence, then the results of that very intelligence and beneficence exhibited in organisms can be made use of to destroy the conception of those qualities in their supreme cause, and to substantiate a theory which, by our supposition, is utterly devoid of truth. It is on this account that Natural Selection can never be completely proved or disproved by physical science in *à posteriori* investigation, for it will be always open to one side to say the utility not yet shown in any given structure will be shown later, and to the other side to say whatever utility you show, though existing in an organ, was not the cause of that organ.

"This was no doubt felt by the earlier opponents of Mr. Darwin, who naturally opposed him on *à priori* grounds, and the same feeling has led his supporters to desiderate criticism from the physical-science standpoint, which can never be *quite* conclusive, and can only be approximatively so by going into great detail. And this, when done, they in turn affect to sneer at as '*minute.*'

Critical details.

Mr. Chauncey Wright's remarks on mimicry do not call for reply, as it is now conceded that imitation occurs where Natural Selection cannot have developed it. In reply to my criticism as to the origin of the mammary gland, my opponent suggests that its development may have been produced by a young mammal's clinging by suction to the body of its dam, this clinging causing sebaceous glands to be hypertrophied, and this hypertrophy causing their secretion *to become nutritious.* I confess this seems to me an extreme supposition.

"With regard to sexual selection, Mr. Chauncey Wright asks, 'Is it credible Mr. Mivart can suppose that the higher or spiritual emotions, like affection, taste, conscience, ever act *directly* to modify or compete with the more energetic lower impulses, and not rather by forestalling and indirectly regulating them?' I answer, unhesitatingly, 'Yes;' and in return say, 'Is it credible Mr. Chauncey Wright can suppose they do not?'

"As to apes, it is enough to reply, that other animals are also kept in cages, but do not exhibit the phenomena to which I referred.

"Passing to the hoods and rattles of poisonous snakes, Mr. Wright asserts that if 'their "warnings" are also used against intended victims, they can only be used either to paralyse them with terror or allure them from curiosity,' &c. Has Mr. Wright then never observed the tail of a cat when the animal is watching a mouse?

"A somewhat singular exhibition of the use of the imagination occurs where Mr. Wright tells us it may be that 'the rattle will serve all the purposes that drums, trumpets, and gongs do in human warfare. The swaying the body and vibrating tongue of most snakes, and the expanding neck, and the hood of the cobra, may *serve as banners.*' I must submit to be blamed for my 'poverty of resources' by one whose 'reason' is supplemented by so active an imaginative faculty.

An objection singular in a mathematician.

"In reviewing my chapter on Independent Similarities of Structure, Mr. Wright replies to my remarks as to characters in placental and implacental mammals which are similar, indeed, but not similar through inheritance:—

> "'Our author . . . . has incautiously left a hostile force in his rear. He has claimed in the preceding chapter for Natural Selection that it ought to have produced several independent races of long-necked Ungulates, as well as the giraffe; so that, instead of pursuing his illustrations any further, we may properly demand his surrender.'

"But such a demand would be futile; the cases, in fact, being quite dissimilar. With regard to the Ungulates we have the action of similar causes upon organisms which, by the hypothesis, are closely alike; in the case of the placental and implacental beasts we have similar causes acting upon organisms which, by the hypothesis, are fundamentally different.

"Certainly, then, if Mr. Darwin's theory is true, we ought to have, in the first case, many similar forms developed; and we ought *not* to have such in the second case. It is just the difference between adding equals to equals and equals to unequals.

"Passing over Mr. Chauncey Wright's exposition* of our Lord's discourse to Nicodemus (in which, I fear, few Darwinians will take any interest), I proceed to notice what Mr. Wright exhibits as 'a good illustration' of the origin of species by Natural Selection in the shape of 'the growth of a tree.' It is so, he tells us:—

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* "Mr. Wright speaks of 'the symbols *water* and the Spirit, which Christians have ever since worshipped.' It is certainly difficult to remember the multitude of sects which have appeared since the dawn of Christianity, but the existence of any body of *water-worshippers* strikes me as a novelty.

An illustration in the growth of a tree.

> "'For its branches are selected growths, or few out of many thousands that have begun in buds; and this rigorous selection has been effected by the accidents that have determined superior relations in surviving growths to their supplies of nutriment in the trunk, and in exposure to light and air. This exposure (as great as is consistent with secure connection with the sources of sap) seems actually to be sought, and the form of the tree to be the result of some foresight in it. But the real seeking process is budding, and the geometrical regularity of the production of buds on twigs has little or nothing to do with the ultimate selected results, the distributions of the branches, which are different for each individual tree.'

"Now, I willingly accept this illustration, which I propose to turn round and make use of against its author's view, and for the purpose of showing that it exemplifies, not 'the origin of species by Natural Selection,' but the origin of species by *innate* law, modified by the subordinate action of Natural Selection.

"For, in fact, does not every one know that, in spite of these external influences, each kind of tree has a certain general character of growth which is definite and unmistakable. The oak, the fir, the birch, &c., each has its own special *facies*. Mr. Wright does not deny this; he says:—

> "'The general resemblance of trees of a given kind depends on no formative principle other than physical and physiological properties in the woody tissue, and is related chiefly to the tenacity, flexibility, and vascularity of this tissue, the degrees of which might almost be inferred from the general form of the tree.'

"Precisely so. But on what do these physical and physiological properties depend? It is useless to endeavour to avoid the admission; we shall always be compelled by reason to confess the existence, in each seed, of a principle, an *intimius principium* conditioning the evolution of the plant according to its nature and laws. To deny that there is a something giving unity to the composite whole, and unity of *a definite kind,* is to contradict the plain evidence of our senses and our reason.

"This internal principle it is which produces the character of each tree's growth, while the special details are determined by the action of external influences upon it. Just in the same way, I believe, that an innate predisposing cause produces the evolution of new species; the special details being determined by subordinate agencies, and amongst them that of Natural Selection. Mr. Wright's illustration suits me so well I will pursue it yet further. He observes:—

> "'If we could study the past and present forms of life, not only in different continents, which we may compare to different individual trees of the same kind, or better, perhaps, to different main branches from the same trunk and roots, but could also study the past and present forms of life in different planets, then diversities in the general outlines would probably be seen similar to those which distinguish different kinds of trees, as the oak, the elm, and the pine; dependent, as in these trees, on differences in the physical and physiological properties of living matters in the different planets—supposing the planets, of course, to be capable of sustaining life, like the earth, or, at least, to have been so at some period in the history of the solar system.'

"Precisely so once more! In each case forms would be evolved in accordance with that innate potentiality which God has implanted in each case in the matter of which such planet was composed. Not that there, any more than here, all that was potential would become actual, but that the innate potentiality, modified by external influences, would be determined in special forms in the production of which the innate power, not the external conditions, would be the main evolving agent.

Vital forces.

"Mr. Wright seems to consider that the use of such words as 'polarity' and 'luminosity' tends to discourage the investigation of the laws and conditions by and through which such properties are manifested. Mr. Wright tells us somewhat dogmatically that '*definite* vital aggregations and *definite* actions of vital forces exist, for the most part, in a world by themselves.' I should be the last to deny the distinctness of 'vitality,' but that certain conditions may determine its sudden and *definite* manifestation, is maintained more strongly than ever by some men of science, and amongst them Dr. Bastian. There is one expression of Mr. Wright's which it will be well to notice; he says: 'It is not impossible that vital phenomena themselves include *orders of forces* as distinct as the lowest vital are from chemical phenomena. May not the contrast of merely vital or vegetative phenomena with those of *sensibility* be of such order?' I notice with pleasure this hopeful expression. It is most true that there are these differences of order, but there is one more yet. The *intellectual* or rational order is as distinct from the merely sensible as is the sensible from the vegetative, or this last from the chemical. Here we touch the one great and fatal error of so many of our leading naturalists. The confusion of intellect with sensation, of reason with the association of sensible images is, I am persuaded, the fundamental speculative vice of the day. Before concluding this reply there are a few more objections which Mr. Wright does me the honour to make, that must be noticed one after the other.

Verbal criticisms.

"I am represented as passing an unfair judgment because I say that, though feeling myself incompetent to advance an opinion as to the correctness of Sir William Thomson's astronomical calculations, I yet assert 'that the fact that they have not been refuted pleads strongly in their favour, when we consider how much they tell against the theory of Mr. Darwin.' For my part I am unable to see how an incompetence for judging astronomical calculations necessarily carries with it an incompetence for judging of the probability of their truth, resulting from their non-refutation by those whose interest would lead them to refute, and who possess the knowledge and ability to enable them ably to handle the requisite questions and calculations.

"Again, Mr. Wright does not 'see how, with such uncertain "fortuitous, occasional, and intermitting" elements,' I 'could have succeeded in making any calculations at all.' I venture to think, however, that an inability to determine the positive time required for the occurrence of certain phenomena in no way involves an inability to fix a minimum period for their development.

"Again, in criticising the use of the words 'contrivance' and 'purpose,' Mr. Wright tells us, 'the relations of a machine to its uses may be considered in good sound English as contrivances and purposes without thinking of what the inventor *intended.*' Now I deny that we can so speak without *implicit* reference of the kind, though we need not make direct or explicit reference. We are also told that 'the proper meaning of the word "intention"' is '*concentration*, and the *not* intending of something else.' I should be glad of some reference to authorities as regards this assertion. As a fact the word is used in the sense I have assigned to it. Finally Mr. Wright gives us the application of these new definitions. He affirms that Mr. Darwin is not irrational in asking whether 'the Creator intentionally ordered' certain phenomena because we cannot reasonably make use of the term 'intention' in reference to the Creator *at all.*

"It is evident, however, that in Mr. Darwin's opinion we *can* speak of Divine intention in some things, otherwise he would not ask whether we could do so or not even in these. It would be quite superfluous for any one who believed we could do so in *no* case to ask the question with regard to certain special cases. The criticism merely amounts to saying that both Mr. Darwin and I, instead of using the word 'intention,' should employ some other word, possibly 'advertence.' This leaves the substance of my remarks and my criticism of Mr. Darwin quite unimpaired and in full force.

Conclusion.

"Thus I venture to urge, in opposition to my critic, that far from misinterpreting Mr. Darwin, I have been enabled to bring out more clearly what are his exact position and teaching now, by defining more exactly what was his original theory of the origin of species.

"Also, that though by no means necessarily involving irreligious or anti-teleological conceptions, there is no slight danger of the strengthening of these errors by a certain use of the Darwinian theory.

"My little book was directed to two objects—one to show that Natural Selection is not *the* origin of species; the other, that evolution is perfectly compatible with the strictest Christian orthodoxy: and, in spite of my esteem for Mr. Chauncey Wright, and a careful and respectful consideration of all that he has urged, I cannot at present see my way to retracting or even modifying, in deference to his criticism, even a single passage of my work on 'The Genesis of Species.'"

CHAPTER XII.

CAUSES.

"Truths vouched for by the intellect as *positively* necessary truths, compel our acceptance of a First Cause with power, knowledge, wisdom and goodness, and therefore prove the existence of final causes also—the existence of a personal God being the ultimate lesson taught by Nature, that as to its own cause."

The axiom of Causation.

AT the end of the tenth chapter it was said that the task of considering what, if anything, can be learned from Nature as to its own Causes yet remained. This great question has (unavoidably as it seems) been already incidentally adverted to and briefly noticed, but it is now time to consider it deliberately and expressly.

In the second chapter it was sought to establish the proposition that what the mind *positively* declares to be absolutely, necessarily, and universally true, is true. One such proposition is that respecting causation, as any one can test by an act of introspection. The proposition referred to, is the axiom that "*every new existence and every change must have a cause*," and another, equally evident, is that *everything must either be absolute or caused.*

Science points to no beginning.

The natural world displays before our eyes an indefinitely continuous series of phenomenal changes, all of which we know have their appropriate physical causes—causes very generally capable of discovery by the physical sciences. Science reveals to us an apparently endless series of passed phenomenal changes and indicates an indefinite series to come, but it does not distinctly and unequivocally point to any beginning. It is quite conceivable that the stellar universe may in æons of time unceasingly pulsate alternately to and fro from a condition of scattered suns, planets, and satellites, such as we are fragmentarily acquainted with now, to the condition of an universally diffused nebular mist. It is also conceivable that a similar change may eternally creep over the Cosmos of suns and worlds, so that each part in its turn, but never the whole simultaneously, may undergo such transformation. Reason certainly does not affirm that such changes may not have proceeded in cycles from all eternity, owing to an eternal collocation of causal factors. If such collocation and factors be the absolute, then the universe and its cause are one—in a word we have Pantheism.

But either to a Pantheistic First Cause,

The consideration of Pantheism cannot be entered on here; that Protean form of error, as I believe, requires consideration in a separate work. It may however be at once remarked that, apart from other *à priori* considerations of reason, by which I believe that it can be adequately refuted, it can be so by the positive declarations of our reason in the matter of morality. Introspection has shown us that there is an absolute distinction between good and evil; but Pantheism necessarily denies that, with every other absolute distinction. Therefore unless the positive declarations of our intellect as to necessary truth deceive us (in which case we are driven into scepticism and can argue no longer, nor even conclude that we cannot conclude), Pantheism must be false.

If we accept the other alternative, if, that is, we say that such collocation and factors are *not* the absolute, then they, like everything else, must be caused. That they can be really fortuitous, is what no modern philosopher would assert, chance being now everywhere recognised as a mere term denoting our ignorance of causes and conditions.

But if such collocation and factors (which lie as it were at the base of the phenomenal universe) be caused, they cannot be caused by all that series of phenomena of which they are the condition, still less by any part of that series. They must therefore be caused

Or one distinct from the universe.

by something external to them; i.e., by something distinct from the phenomenal series itself. But if the phenomenal universe be eternal, this cause must also be eternal. It must be absolute, as the cause of everything phenomenal and relative. It must be orderly and intelligent, as the first and absolute cause of an orderly series of phenomena which reveals to us an objective intelligence in the Bee and the Ant, which is not that of the animals themselves, and which harmonizes with and is recognised by our own intellect. It must be adequate to produce all the phenomena which our powers of observation and introspection tell us have been produced, such as power, intelligence, morality, and will. We thus, as it seems, arrive necessarily at the conception of an absolute First Cause, and an acceptance of that conception as a truth demonstrated to us by Reason. But an absolute First Cause, which amongst its attributes has power, intelligence, goodness, and volition, such as find their faint and inadequate types in our own faculties, necessarily involves another and second kind of causation. It must, as "Will," have such an intensity of "purpose" that no human purpose can be comparable with it. Hence necessarily follows the second kind of causation just referred to, namely, *final causality*—the enchainment of all phenomena and their adaptation to ends in a hierarchy of augmenting activities from celestial revolutions and the attractions and cohesions of sidereal masses through vegetable life and animal sentiency up to self-consciousness and free volition; so that from kingdom to kingdom (mineral, vegetable, animal and rational) the creation may rise towards an ideal, by successively higher degrees of participation in the perfection of the First Cause itself.

Together with final causation.

Whether this teleological conception, this idea of *final causation*, can be gathered from mere irrational nature directly or not, it can most certainly be obtained from a consideration of nature in its broadest sense—nature of which our own self-consciousness forms a part. This, then, is the last and the highest lesson which Nature has to teach us—the revelation of its own causation and the indication (through the sentient and rational faculties of creatures) of the being and attributes of its First Cause and Author, which, as absolute Power, Intelligence, Goodness, and Will, is and must be God.

Thus supplying a key to Evolution.

But does this conception afford us any natural key wherewith to unlock the mysteries of the mode of God's manifestation in nature, the meaning of the unceasing changes it presents — the great process of Evolution? I believe it does. The First Cause must not only have a purpose, but, as intelligent, he cannot be self-contradictory, and hence necessarily follows the *continuity* of cosmical evolution. By the union of these two laws, (1) continuity and (2) final causality, the whole phenomena of the universe—physical, biological, political, moral, and religious—may be explained and understood as a *continuous* evolution towards a *preordained* end.

Mr. Spencer's evolutionary formula.

Mr. Herbert Spencer has elaborated a vast and coherent conception of the whole process of evolution, which he represents as taking place according to an universal law of progress from a state of unstable uniformity having few and indefinite characters to a state of stable diversity with a multitude of definite characters. He conceives that everything in the material universe is proceeding, in his own words, "*from an indefinite incoherent homogeneity to a definite coherent heterogeneity.*" He brings forward, however, no explanatory basis of this law. His system enables us to see neither the origin, the ultimate future, nor the sustaining principle of such evolutionary process. The philosophy here advocated, on the contrary, shows us the origin, basis, and outcome of this great process, by means of those fundamental truths which occupied us in the first two chapters. By means of our knowledge of the self-conscious, persistent Ego, with its power of knowing positive, objective, necessary truth, we have arrived at the conception of a necessary First Cause with intelligence and will, and consequently, as just said, the cause of an universe with both continuity and purpose.

"Purpose" as shown in Nature.

We have also seen, in the succeeding chapters, how the process of evolution, as carried through the material world, shows us the development from potentiality into actuality of successively new forms. We cannot indeed imagine the ultimate "how" of their production (which as being beyond experience is necessarily beyond imagination), but we recognise the fact that they *are* so evolved; and we have, in some cases, already gleaned a few of the conditions of their evolution. In passing to the vegetable world from the mineral kingdom, we behold manifested, for the first time, a *vital* form, or force. In passing to the animal world from the vegetable kingdom, we behold manifested, for the first time, a *sentient* form. In passing to the human world from the kingdom of brute animals, we behold manifested, for the first time, a *rational* form.

Thus modern science shows us plainly the truth proclaimed of old—that a successively increasing fulfilment of purpose runs through the irrational creation up to man. The inorganic world can do without the organic, but not *vice versâ.* The vegetable world can exist without the animal, but not *vice versâ.* The animal world can do without the rational world as experienced by us, but not *vice versâ.* Cosmical entities and their laws *do*, then, serve organic being more than inorganic, sentient being more than insentient, rational being more than sentient. Therefore if there is intention and will in the First Cause at all (and we have seen that to deny it is to contradict reason), He must have willed most service to man of all the multitude of creatures which our senses make known to us. It is not surprising then that we find the same law of progress to extend through the evolution of human society. In politics, in law, in science, in art, and in religion, we find the same law of evolution—continuity and final causality resulting in the manifestation of increasingly stable, coherent, definite, and complex varieties of being.

Hence we get the formal law of Cosmical Evolution—whereof Mr. Spencer's law is the material expression. This formal law may be defined as the continuous progress of the material universe by the unfolding of latent potentialities through the action of incident forces (i.e., through the interaction of its parts) in harmony with a preördained end, such unfolding exhibiting a succession of changes from indefinite, incoherent homogeneity to definite coherent heterogeneity.

Formal law of Evolution.

But if the conception of an Infinite and Absolute Being, Omniscient, Omnipotent, and Holy, be thus taught by Nature, what are the *causes* of its non-acceptance by prominent teachers of science and philosophy in our own day? What reasons are brought forward against it?

Non-theistic views: Mr. Spencer's.

Mr. Herbert Spencer is the most decided upholder of the necessity and truth of a conception of a First Cause. But this he speaks of as the Unknowable, and denies our right to ascribe to it any attribute other than existence, or to attribute to it personality. But, in the first place, not to speak of it by that term is practically to degrade it to a *lower* level than ourselves, though this is by no means Mr. Spencer's intention. It has this practical effect, because we cannot conceive anything as impersonal and yet of a higher nature than our own. And, indeed, this circumstance is not owing to a mere mental impotence, but to a positive and clear perception. For to be a person, means to be a being possessing knowledge and will; and any being which has not these faculties must be indefinitely inferior to one which has them. The First Cause, as the cause of all knowledge—including knowledge of good and evil, and all power of will—must be adequate to their production. He must possess therefore attributes analogous to these qualities as known in ourselves, though of course infinite in degree. Personality therefore must be predicated of the First Cause, under pain of violating the primary dicta of our reason.

The inadequacy and, to speak plainly, the absurdity of this "Unknowable" has been considered in the twelfth chapter of the 'Genesis of Species,' as also its bearing on our conceptions of religion, which Mr. Spencer pretends through it to reconcile with science; though as to such reconciliation Mr. Lewes truly observes* that we can never "successfully found a Religion on the admission of this unknowable; for Religion, which is to explain the universe and regulate life, must be founded on the known and knowable relations." But, indeed, Mr. Spencer's system necessarily negatives every form of religion, since he distinctly affirms that "Theism" is "incredible," and that no "form of Religion" is "even thinkable."

Professor Huxley's.

Professor Huxley, however, tells us that the necessity of a belief in a personal God, in order to a religion worthy of the name, "is a matter of opinion!" Of course the word religion may be employed in some unusual sense. I recollect reading of a certain Emersonian who, having accompanied his wife to see Fanny Elsler dance, and being charmed, remarked to her during the performance—"Margaret, this is poetry." To which his wife replied—"No, Paul, it is *religion!*" Of such religion I willingly make a present to Professor Huxley. But, apart from such *bizarre* employments of the word, I firmly adhere to my proposition. I know that Buddhism, though "a religion," is sometimes asserted to be atheistic; but the Buddhistic conception of a power or principle apportioning after death rewards and punishments according to a standard of virtue, necessarily involves the existence of an entity, which, as being most powerful, intelligent, and good, is virtually, and logically, a personal God, whatever may be the name habitually applied to it.

I do not know what precise meaning Professor Huxley himself would give to the word religion. He speaks of "worship, 'for the most part of the silent sort,' at the altar of the Unknown and Unknowable," but he has not (as far as I recollect) explained to us as yet the full and exact nature and tenets of that religion the ritual of which is thus hinted at. Mr. Darwin's conception of religion is, however, sufficiently definite. He tells us * that it consists "of love, complete submission to an exalted and mysterious superior, a strong sense of dependence, fear, reverence, gratitude, hope for the future, and perhaps other elements."

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* 'Problems of Life and Mind,' vol. ii. p. 453.

The Unknowable.

Let us apply this to the Unknown and the Unknowable. "Love" for that of which we can by no possibility know anything whatever, and to which we may as reasonably attribute hideousness and all vileness, as beauty and goodness! "Dependence" on that of which treachery and mendacity may be as much characteristics as are faithfulness and truth! "Reverence" for an entity, whose qualities, if any, may resemble as much all we despise as all we esteem, and which, for all we know, may be indebted to *our faculties* for any recognition of its existence at all! "Gratitude" to that which we have not the faintest reason to suppose ever willingly did anything for us, or ever will! "Hope" in what we have no right whatever to believe may not, with equal justice, be a legitimate cause for despair as pitiless, inexorable, and unfeeling, if capable of any sort of intelligence whatever.

This is no exaggeration. Every word here put down is *strictly accurate*, for if that which underlies all things is to us the unknowable, then there can be no reason to predicate of it any one character rather than its opposite. If, on the other hand, we *have* any reason to predicate goodness rather than malice, nobility rather than vileness, then let preachers of the unknowable abandon their unmeaning jargon, for it is no longer with the unknowable we have to deal, and we are plunged at once into a whole world of as distinctly dogmatic theology as can be conceived—a theology the dogmas of which are profoundly mysterious, while they are even more trying, and at the same time more illuminating, to the reason, than any others of the whole catena which logically follow.

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* 'Descent of Man,' vol. i. p. 63.

Five objections to Theism.

The objections drawn from natural science to a belief in a Divine First Cause, which have been of late made popular, seem to be reducible to five heads.

The first of these is that "wisdom" and "purpose" are not discernible in nature; but rather that its failures, and the prodigal waste (as of germs) which it shows, contradict the conception of final causes altogether.

The second objection is that "Omnipotence" cannot be predicated of a rational and good Author of Nature, because of the failures just referred to and the suffering which everywhere exists.

The third objection is that "morality" must be denied to the First Cause on account of the pain and death strewn broadcast over the world, and on account of the unworthiness of some natural productions.

The fourth objection is one which really applies only to those who feel themselves rationally compelled to regard the First Cause as a *Creator*. But as a distinguished school of philosophy, though not that advocated here, accepts that view, and as it is one necessarily held by Christians as a revealed truth, it may be well here to refer to it. This fourth objection is that the acceptance of Evolution negatives a belief in Creation.

The fifth objection is that the conception of a personal God is a pure figment of the *human* imagination, and, as *anthropomorphic*, is necessarily false; as also that it is belied by the material world, which evidently is *not* formed and *governed* (if governed at all) as it would be by an Anthropomorphic Deity.

The position here taken up is the same as that maintained in the 'Genesis of Species'—namely, that the attributes of the first cause are (as has been before said) to be gathered from the consideration of nature *as a whole*, of nature *including* man, and not from the consideration of irrational nature only.

A *Divine* First Cause is recognised by our intellect as a necessary consequence of our perception of necessary truth and of absolute morality.

This Divine First Cause, thus recognised by our intellect as necessarily existing, is more or less qualitatively revealed to us in the material universe according as we extend the sphere of our observations. It is concealed most completely when the inanimate creation is alone considered. It seems to assume a Pantheistic form when we rise no higher than the brute creation. If man alone occupies our attention, a narrow anthropomorphic Deism may be the result; but from a sympathetic study of the whole universe—the mineral, vegetable, animal, and human creations, including intellect, morality, and will—the conception of Almighty God becomes naturally and distinctly revealed to the human intellect.

Sir William Hamilton has said:* "Nature conceals God, and man reveals Him." This is too unqualified a statement. Rather, physical nature reveals to us one side of the Deity, while the moral world brings us in contact with another, and at first, to our apprehension, a very different one; though the difference may be soon perceived to proceed, not from reason, but from a want of flexibility of the imagination—a want so exceedingly common, especially amongst those whose minds have been long immersed in physical studies only.

"The theist, having arrived at his theistic convictions from quite other sources than a consideration of zoological or botanical phenomena, comes to the consideration of such phenomena and views them in a theistic light, without, of course, asserting or implying that such light has been derived from *them*."†

The only part that irrational nature can be reasonably called upon to play in this matter is the part of a test as to the validity of our conceptions concerning the First Cause derived from a contemplation of nature as a whole and primarily of our own human nature.

Let us apply then this test to the first of the five objections above mentioned, namely, that to our conception of "wisdom" and "purpose" as attributes of the First Cause. As has been said, these objections are often drawn from nature's seemingly blind prodigality, when "of a thousand seeds she often brings but one to bear." Mr. Lewes, with this idea in his mind, asks* whether we should consider that man wise, who spilt a gallon of wine in order to fill a wine-glass?

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* 'Lectures on Metaphysics and Logic,' vol. i. Lecture ii. p. 40.

† 'Genesis of Species,' 2nd edition, p. 296.

First objection, prodigality of Nature.

To this sort of objection it may be replied that even man has often *several* distinct intentions and motives for a *single* act; and any one who believes in God can have no difficulty in supposing that the purpose of any natural process, as it is apparent to the human observer, may be but an exceedingly subordinate one out of an infinite number of motives in the Divine mind. Baden Powell has well asked:† "How can we undertake to affirm, amid all the possibilities of things of which we confessedly know so little, that a thousand ends and purposes may not be answered, because we can trace none, or even imagine none, which seem to short-sighted faculties to be answered in these particular arrangements?"

But even we are often able to detect utilities which become apparent long after events, which at first were apparently purposeless, have taken place. As an illustration of long latent utility, the immense coal deposits may be cited. On this subject Professor Huxley remarks: "Let us suppose that one of the stupid salamander-like Labyrinthodonts, which pottered with much belly and little leg, like Falstaff in his old age, among the coal-forests, could have had thinking power enough in his small brain to reflect upon the showers of spores which kept on falling through years and centuries, while perhaps not one in ten million fulfilled its apparent purpose, and reproduced the organism which gave it birth." And the writer goes on to imagine the creature "moralising upon the thoughtless and wanton extravagance which nature displayed in her operations!" Yet this "thoughtless extravagance" has resulted in providing us with our coal treasure —a worthy gift of thoughtful and provident beneficence.

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* 'Fortnightly Review,' July 1867, p. 100.

† 'Unity of Worlds,' Essay ii. p. 260.

But the idea of God implies the one cause of *all* the processes of nature. He wills and intends them *all*, and therefore whatever results *must* be a fulfilment of His intention. When the matter of the artist's or the philosopher's brain comes to feed worms, it fulfils God's purpose no less than when it energises in creations of genius or of wisdom. It is as impossible for *any* accident to defeat the purpose of Him whose will ordains *every* process, as it is for the irreligious man, by his voluntary revolt and anti-religious efforts, to do other than stultify himself by hastening on the fulfilment of God's own purpose.

An old answer.

It may not be uninteresting to some of my readers to see how clearly this conception, which seems so to escape the grasp of our modern "*advanced*" thinkers, was a familiar idea in the thirteenth century. St. Thomas Aquinas* on this matter says: "Quod si aliqua causa particularis deficiat a suo effectu, hoc est propter aliquam causam particularem impediantem quæ continetur sub ordine causæ universalis. Unde effectus ordinem causæ universalis nullo modo potest exire." .... "Sicut indigestio contingit præter ordinem virtutis nutritivæ ex aliquo impedimento, porta ex grossitie cibi, quam necesse est reducere in aliam causam, et sic usque ad causam primam universalem. Cum igitur Deus sit prima causa universalis non unius generis tantum, sed universaliter totius cutis, impossibile est quod aliquid contingat præter ordinem divinæ gubernationis; sed ex hoc ipse quod aliquid ex una parte videtur exire at ordine divinæ providentiæ, quo consideratur secundam aliquam particularem causam, necesse est quod in eundem ordinem relabatur secundum aliam causam."

Second objection.

The second objection (that to the Omnipotence of the First Cause), in so far as it relates to failure of purpose, has been answered in answering the first objection; in so far as it relates to the wide diffusion of suffering, it may be answered in answering that which follows.

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* 'Summa Theol.,' p. i. *Q.* 19, *A.* 6, and *Q.* 103, *A.* 7.

Third objection, pain and death. The third objection, then, that to God's goodness, made partly on account of the pain and death diffused through the world, and partly on account of the seeming unworthiness of some natural products, may now be considered.

As regards the sufferings of living men and women, a belief in the immortality of the soul (which, as we shall see, follows as one of the consequences of the propositions the truth of which is supported in this and in the preceding chapters) sufficiently does away with the force of the objection in their regard. Granted a *Deus unus et remunerator* together with this immortality, and it becomes readily conceivable that the sufferings of this life may be hereafter looked upon by us as truly blessings in disguise. Indeed, paradoxical as the question may sound, it may be asked, Could we, even apart from these beliefs, afford to lose pain and suffering altogether? All that is most admirable and beautiful in human life and character would be lost were there no opportunities or occasions for generous self-denial, loving pity, tender compassion, and ardent philanthropic effort.

The difficulty then lies in the sufferings of the brute creation, and this is a difficulty now felt very widely and with extreme acuteness by those who possess the tenderest hearts and natures the most worthy of our esteem and regard.

Sufferings of brutes.

Nevertheless, I believe that the difficulty felt is mainly owing to a misconception, namely, to that inverted anthropomorphism (treated of in Chap. VII.) which makes men and women so generally attribute experiences like their own to brute animals. But even in men and women suffering depends mainly on the *mental* state of the sufferer. Only during consciousness does it exist at all, and only in the most highly-organized men does it reach its acme. Savages seem generally to have far less sensitiveness to pain than have cultivated and refined human beings. The direness of pain consists in the *knowledge* of it; in that intellectual agony which recollects past moments and anticipates the future ones—a condition necessarily existing in a being capable of "looking before and after." As, again, our nature is an intellectual one, that nature enters into all our feelings, and therefore we cannot argue with any exactness from *our* feelings to those of brutes, because we cannot imagine what feelings altogether devoid of intellect can be. And though, of course, animals *feel*, they do not *know* that they feel, nor reflect upon the sufferings they have had or will have to endure. And if even the lowest races of men feel less physical pain than we do, how much less may be the physical suffering of even the highest brutes than that of the lowest men? Tears, cries, writhings, and other signs, such as are normally in us the expressions of suffering, are not necessarily such even in ourselves, as in the case of the lady's finger before referred to.* They may be, and often are, the mere accompaniments of reflex nervous action, and may, in brutes, even when accompanying feelings, accompany feelings widely different from our own.

Who that has seen how a daddy-long-legs returns again and again to a lighted candle, after first one leg and then another has been burnt in the flame, can think that the creature really *suffers?* And if this spectacle does not console the compassionate observer, let him reflect that if a wasp, when enjoying a meal of honey, has its slender waist suddenly snipped through and its whole abdomen cut away, it does not allow such a trifle to interrupt for a moment its pleasurable repast, but it continues to rapidly devour the savoury food, which escapes as rapidly from its mutilated thorax.

Apparently unworthy phenomena.

That portion of the present objection to God's goodness which reposes on the supposed unworthiness of certain natural actions and productions is also due in part to inverted anthropomorphism, in part to anthropomorphism itself.

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* See *ante* p. 221.

If we alone of all animals are endowed with a moral nature, the due exercise of that nature is, of course, the one thing for us. But we have already considered how actions may be materially moral yet formally immoral (as an act of kindness done for a base end), or materially immoral yet formally moral (as when, a false conscience having been formed, an act really wrong is believed by the doer to be a right act). Creatures that have not a moral nature at all can of course do nothing either "moral" or "immoral." Thus ants that make slaves, or insects which lay their eggs in the bodies of other insects, do nothing *wrong*. Nor is there anything really cruel in the bloodthirstiness of a tiger or really impure in the apparent lasciviousness of an ape. It follows therefore that those who believe in the existence of angelic beings may conceive such beings as looking on with perfect complacency at brutes performing actions which *in us* would be the expression of the last degree of vileness, filthiness, or cruelty, and which naturally cannot be contemplated *by us* without disgust because of their unconscious association by us with analogous imaginary *human* actions. Such actions would be thus complacently contemplated by immaterial intelligences, because such actions in brutes are not and cannot be either vile, filthy or cruel, seeing the performers are but sentient automata and the actions themselves blameless apart from rational will.

Yet, as just said, such actions tend to be regarded by us as really disgusting or wrong *in themselves*, because we habitually and naturally regard them from the human point of view. It is this which causes a difficulty to exist in some persons' minds in believing certain productions to be expressly willed by the First Cause, because such persons unconsciously attribute to that Cause the human point of view. The structure of certain parts of some of the apes, both of the old and the new world, and the forms assumed by certain fungi, may serve as examples. But the feelings which arise in us, the sentiments inspired by the aspect of such parts or forms, are essentially human and *human only*. In themselves, objectively, they have doubtless beauty and perfection such as we elsewhere readily recognise, though such qualities are disguised from us by our human prejudices. It is surely quite conceivable that even to us, as disembodied spirits, such actions and productions as those referred to may appear in an altogether different light, and we may, so to speak, smile at the childishness of the notion that there could be anything worthy of even the faintest disapproval in that which has really no moral character whatever, but which to us as men is revolting or disgusting. Yet our intellect sees no difficulty in at once believing that, under certain conditions, what is disgusting to us may be really most admirable, e.g., that a filthy mendicant, loathsome with cutaneous disease and intolerable to smell as much as to sight but with a will most rightly directed, may really be one of the noblest and most glorious objects which the whole material universe presents to its Divine Author, and that angels would turn away with indifference from what men most admire to contemplate such a spectacle.

Can there, then, be any real difficulty in accepting the belief that the whole material Universe, and all the actions (apart from human volition) performed by it, are really beautiful, from the superhuman point of view, however much the one-sidedness of our view of part of it (through the associations of purely human feeling) may disguise the beauty of such part from us?

Fourth objection, Evolution negatives creation.

The fourth objection, that as to the conflict between the ideas of "evolution" and "creation," has been specially treated of in the last chapter of the 'Genesis of Species.' Here I will but reaffirm that the distinction between primary creation and secondary or derivative creation, entirely does away with the difficulty. If, with the great St. Augustine, we believe that the whole material universe was created in *one instant*, and further accept the view that all its organisms were then created not actually but *potentially* (to be subsequently evolved into actual existence at due times and seasons when the conditions originally intended and decreed should arise), it is obvious that the difficulty disappears. As to original or primary creation, science can say absolutely nothing against it. That it is "*conceivable*" is proved by the fact that it is widely, not only conceived but believed. That it is "*unimaginable*" necessarily follows from its being an action which, by the hypothesis, is utterly beyond experience.

Mr. Lewes, on this subject, remarks:* "When therefore it is argued that the creation of Something from Nothing, or its reduction to Nothing is unthinkable, and is therefore peremptorily to be rejected, the argument seems to me defective. The process is thinkable but not imaginable, conceivable but not provable."

But we have to a certain extent an aid to the thought of absolute creation in our own free volition, which, as absolutely originating and determining, may be taken as a type to us of the creative act. It is a perception of this analogy which led Gioberti to affirm that the intellect sees, as a necessary truth, that an absolute Being must be the *creator* of all secondary existences, which he expressed in his primary affirmation, "*Ens creat existentias.*" If the doctrine of creation be once received, the fact of our free-will acquires new significance. For Omnipotence to create a being capable of opposing itself is perhaps one of the most awe-inspiring aspects in which the First Cause can be contemplated.

Fifth objection, Anthropomorphism.

The fifth and last objection is that made to the notion of a personal God as being necessarily Anthropomorphic, and as contradicted by the phenomena of a world which is evidently not governed by an Anthropomorphic Deity.

And here, again, I must refer the reader to the last chapter of my 'Genesis of Species,' where this question is considered. It may, however, be here remarked that both the difficulties contained in this fifth objection may be met by the adoption of that mode of regarding the Almighty which is traditional in the Church's teaching. I mean the teaching that though there is an analogy between the attributes of God and human qualities (so that, e.g., to call Him "good" is neither false nor unmeaning), yet that the disparity being infinite no term whatever, not even that denoting mere existence, can be applied in the same very sense to God and to any creature. Thus after exhausting ingenuity in striving to arrive at the loftiest possible conceptions in order to apply them to God, we must yet declare them to be *utterly inadequate*; that, after all, they are but accommodations to human infirmity; that they are in a sense objectively false (because of their inadequacy), though subjectively and very practically true. But the difference is vast between this view and that which would simply deny to God attributes analogous to human qualities. That denial is practically atheism; while the assertion defended here, maintains that our conceptions only err in not being *true enough*, i.e., in their impotence to attain the incomprehensible reality which, nevertheless, really *is* all that can be conceived, *plus* an inconceivable infinity beyond.

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* 'Problems of Life and Mind,' vol. ii. p. 292.

That this view is the old and traditional one may be made manifest by the following quotation :—

> "Deus in hac vita non potest a nobis videri per suam essentiam, sed cognoscitur a nobis ex creaturis secundum habitudinem principis, et per modum excellentiæ et remotionis : *Sic igitur potest nominari a nobis ex creaturis : non tamen ita, quod nomen significans ipsum exprimat divinam essentiam secundum quod est.* Sicut ut hoc nomen exprimit sua significatione essentiam hominis secundum quod est."—*St. Thomas*, Summa, Pars I. q. xiii. art. 1.
>
> "Cum hoc nomen sapiens de homine dicitur, quodammodo describit, et comprehendit rem significatam, non autem, eum dicitur de Deo relinquit rem significatam, ut incomprehensam, et excedentem nominis significationem, unde patet, quod non secundum eandem rationem hoc nomen sapiens de Deo, et de homine dicitur. Et eadem ratio non est de aliis. Unde *nullum nomen univoce de Deo, et creaturis prædicatur.* . . . Dicendum est igitur, quod cujusmodi nomina dicuntur de Deo, et creaturis secundum analogiam, id est, proportionem."—*St. Thomas, loc. cit.* art. 5.

This conception of the merely analogous resemblance between terms as applied to God and to creatures thoroughly agrees with the assertion "that His ways are not as our ways," and prepares us to expect *à priori* that the material world would not exhibit the characters of a piece of human workmanship. Thus considered, and with these limitations and explanations, it can hardly be denied that the action which we discover immanent in the material universe may be rationally taken to be from God. In that universe we find an action the results of which harmonise with man's reason, which is orderly, which disaccords with the action of blind chance and with the "fortuitous concourse of atoms" of Democritus; but at the same time, an action which ever, in part and in ultimate analysis, eludes our grasp, and the modes of which are different from those by which we should have attempted to accomplish such ends. The inconsistency is surely very great of those who assert that all our knowledge comes from experience, and at the same time affirm that "creative action" is incredible because nature affords no evidence of it. It is so great because that action must necessarily be unperceived and uncomprehended by us, since of creative action we have and can have no experience whatever. The action of God therefore must necessarily be unimaginable by us in its fulness, but its reality and efficiency can be very clearly conceived as incessant and universal in every form of being known to us, and in the far greater number of entirely unknown forms. God is thus neither withdrawn from nor identified with His material creation, and no part of it is left devoid of meaning or of purpose. The poet's plaint as to the flower "born to blush unseen, and waste its sweetness on the desert air," is thus manifestly quite uncalled for; every creature of every order of existence being ever, while its existence is sustained, so complacently contemplated by God that the intense and concentrated attention of all men of science together upon it could but form but an utterly inadequate symbol of such divine contemplation.

Mr. Darwin asks* (in reference to the Duke of Argyll's observation "that variety must be admitted to be an aim in nature") the following remarkable question: "I wish the Duke had explained what he here means by nature. Is it meant that the Creator of the universe ordained diversified results for His own satisfaction or for that of man? The former seems to me as much wanting in due reverence as the latter in probability." To this it may be replied that, granting the validity of the deductions of our reason as to the First Cause, then God, as at once the Sustainer of the universe, concurs by His action in every natural phenomenon, and has an infinite complacency in each. But there is a due because rational order in such complacency; and since we see clearly that "goodness" is the highest of all qualities, an important consequence follows. Let us endeavour to bring home to ourselves the fact that the existence of a countless multitude of actions and interactions is revealed to us in every department of science. Let us consider the series of such in the physical, chemical, and biological sciences; in the rise and fall of states, and the manifestations of art in all its branches. Let us contemplate the physical possibilities of being in the vast fields of stellar space, receding from us on all sides into unfathomable abysses and for incalculable ages, and then try to realise the thought that the Divine complacency in all such phenomena is as nothing compared with that complacency with which He regards one single act of man's free-will directed in harmony with a moral perception, even though it be a mistaken one.

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* 'Descent of Man,' vol. ii. p. 230.

Conclusion.

If then the reasoning contained in this chapter is good and valid, the last and the highest lesson which nature (considered as a whole, i.e., as both rational and sentient) teaches us is that the Great First Cause has attributes of such a nature that the terms "power," "knowledge," "goodness," "purpose," and "will" are those least inadequate to convey to our minds a practical conception and belief concerning them. Of such a Cause the word "personality," in a similarly analogous sense, can not only be fitly used, but must be positively affirmed, since not to affirm is in fact (1) to deny to the First Cause the necessary adequacy for producing the effects we see, and (2) to endeavour to degrade Him to an order of existence lower even than that of mere man, since whatever has knowledge and will has personality. In a word, we learn that we and all the beings we see around us have for our origin, our sustentation, and our end, one only being—GOD.

CHAPTER XIII.

CONSEQUENCES.

"The consequences which flow from the acceptance or rejection of the teaching here advocated are and must be most momentous both to individuals and the community. Those who reject it are logically driven into extreme and irrational negation. Its bearing upon conduct is direct, and must of necessity powerfully affect the future condition of society through popular education. Such consequences may rationally serve to reinforce conclusions before arrived at on other grounds."

Various consequences, speculative and practical.

HAVING learned from Nature the lesson just deduced—that as to her first and final causes, we may now, in the last place, consider certain "consequences"—consequences of several kinds.

First, we may consider the consequences resulting from our acceptance of the teaching of rational nature as to the intellect and will (resulting, as we have seen, in Theism), and in connexion therewith, our own immortality: secondly, the consequences of the rejection of that teaching (in the form of Atheism and Pantheism), noting the extremes to which logic drives those who thus reject it: thirdly and lastly, the necessary consequences of such rejection as regards conduct, i.e., the practical tendencies which thence arise.

Consequences of controversies before noticed.

Glancing retrospectively over the consequences of the various controversies which have come under our observation about (I.) our own existence—the Ego; (II.) about the Will, and (III.) lastly about God, we may see that the efforts which have been made to impugn these truths seem likely to have as their consequences the strengthening and wider diffusion in a more developed form of those very beliefs which such efforts were designed to uproot. To make manifest the reinvigorating effect of these hostile efforts we must briefly traverse again some of the ground we have gone over.

As to the Ego.

I. As regards the Ego, the persistence with which our knowledge of it has been denied, and the arguments by which such denial has been supported, serve to bring out the supreme importance of our recognition of our own self-consciousness and all that our knowledge of the Ego implies and contains. Each man who for the first time has his eyes opened to the marvellous nature of his present knowledge of his own past existence, will see in the necessarily postulated "veracity of memory" the evidence of his possession of real objective truth and of knowledge other than phenomenal. In recognising his own self-consciousness he must also recognise that his mind declares certain truths (e.g., that what thinks, exists) to be absolutely and universally true. He must, on introspection, further see that such truths are not passively apprehended by him, through his impotence to think the contrary, but are actively apprehended and seen to be truths positively necessary and universal, and in this way his mind will again be carried by its own force from subjectivity to objectivity. The validity of the declarations of his intellect, and consequently of its logical processes, being thus rendered unassailable except at the price of absolute intellectual paralysis, its declarations as to "causation" and "morality" gain at once a recognised validity. That phenomenal conditional changes, even if ranging in cycles through a past eternity, must require a real, absolute, eternal Cause, will, as we have seen in the last chapter, be apparent to him, while the absolute declarations of the intellect in the sphere of morality will necessarily lead to the attribution to that cause of "a goodness" harmonising with, however immeasurably exceeding, his own. In other words, the widespread propagation of the absurd denial of our own self-knowledge is an antecedent condition to a more thorough and complete appreciation of that self-knowledge and of all that is made known to us thereby, than any other cause (save such denial) could well be conceived as producing. The supreme importance of the Delphic inscription acquires a fresh significance. In knowing "ourselves" we come to know, with a supreme degree of certainty, a whole sphere of objective truths which the intellect is seen to have the wonderful faculty of perceiving together with the very light by which those truths manifest themselves to it—namely, their objective, necessary, and universal truth.

The facts here referred to may be recapitulated and summed up, in other words, as follows:—

The consideration of our own continued existence reveals to us objective truth and our possession of it.

Our self-consciousness also reveals to us that there are universal, objectively necessary truths (as e.g., "what thinks exists"), and that we can know them.

Similarly our intellect shows us the validity of our own reason and the objective validity of the syllogism which renders implicit truth explicit to us.

Hence we learn the validity of our inference as to the existence of a First Cause of the universe known to us, and of a possible indefinitely vast universe beyond our knowledge.

From this Cause, which our reason tells us must be greater and higher than we can conceive, we rationally infer "order." Therefore there must be a purpose in all that such Cause produces, since "order" and "purpose" exist in human actions and are recognised by the human intellect, which is one amongst the effects of such First Cause.

Such are the consequences which spring from the denial of and consequent controversy about our knowledge of our own continued existence.

As to the will.

II. With respect to "Will," the passionate obstinacy with which the declarations of the common sense of mankind are contested and every fragment of free self-determining power denied, serves to bring out more emphatically than before the marvellous and isolated character of that power of choice which all unprejudiced men know that they possess. When it comes to be fully appreciated, amongst the many, how rigid law rules not only all living as well as inanimate irrational creatures, but how even the immense majority of our own actions are simply automatic, the wonderful character of our power of (in certain cases) voluntarily choosing the less attractive of two competing objects will be less inadequately estimated. Moreover, the recognition in our own being of this power, beyond anything else in nature, renders supernatural action external to us not only credible but to be anticipated *à priori*. Creative action and absolute annihilation, miracle, response to prayer, and the apportionment in another world of rewards and chastisements according to the exercise in this of meritorious volitions, or of the reverse, harmonise thoroughly with that philosophy which asserts the freedom of the will. That they do so harmonise, the very objections of our modern Determinists serve to demonstrate; and it is daily becoming more apparent that to deny these is by implication to deny the existence of virtue, to uproot every possible basis of morality, and even, as we shall see, to eliminate from the social organism those legal sanctions, and even those modes of speech, the reasonableness of which depends upon the real existence of "rights" and "duties" as ordinarily understood. The bitter hostility which exists to the doctrine of man's free-will is not difficult to understand. It is impossible to assert it without implicitly asserting religion; and it is, in one aspect at least, a trial to pride. It is indeed no small trial to the pride of a highly-cultured man of powerful intellect to feel that the poorest peasant is fully as capable as himself of performing the highest actions—those which are the special prerogative of man—namely, the exercise of rational meritorious volition and choice. If there is such a thing as morality, it is beyond comparison as to value with mere intellectual culture or capacity, and it necessarily follows that a poor paralysed old woman sitting in a chimney-corner may, by her good aspirations and volitions, be repeatedly performing mental acts compared with which the discovery by Newton of the law of gravitation is as nothing.

Again, in free-will and morality, we have that which cannot be the result of mere brute inheritance. Conceptions of time and space may be plausibly represented as structural results of a practically infinite brute ancestry which has been submitted to conditions of time and space, but at any rate such ancestry was never submitted to conditions of moral responsibility. Thus the recognition of the human will renders absurd the conception that man can have developed from a brute.

As to God.

III. We come now to the last and supremely important of the many consequences resulting from recent controversies—we mean the vividness with which they force on the many a recognition of the awful, the unapproachable majesty of God under the foolish term of "the Unknowable." Of course there is nothing said upon this subject by Mr. Spencer, or any other writer, which has not been said scores of times by mediæval and other theologians. It is somewhat amusing to read Mr. Spencer's objection to the term "personality," as applied to God, because "inadequate and *below*, rather than above, the unspeakable reality"—as if every tyro in theology did not know, as has been shown, that the common teaching of the Church is that not even "being" can be predicated univocally of God and of any creature, and as if the term *hyperhypostasis* was not a familiar one to denote the absolute personality as distinguished from every dependent one. Yet it is none the less true that grossly inadequate and absurdly anthropomorphic conceptions of God are widely spread, and that the incautious and inaccurate language of popular pious writers is likely to spread further and deeper such grossness and absurdity. Of course, after all, the difference between our highest attainable conception of God and that of the rudest boor is as nothing compared with the difference between that highest conception and the Divine reality. Nevertheless, *quoad nos*, it is a great gain to have a somewhat higher notion more widely spread, and the general dissemination of controversy respecting "the Unknowable" cannot fail to spread wider, conceptions of a higher character. Not but that "the Unknowable," as represented by Mr. Spencer, devoid of personality, is, in reality, *lower* instead of *higher* than the popular conception of God; but at the same time, while those who are indisposed to Theism may thus be confirmed in their negations, those who are Theists cannot but have their Theism improved and their conceptions raised by a careful and detailed consideration of the hopeless inadequacy of all symbols to convey to us a knowledge of our Creator as He is.

The immortality of the soul.

Another consequence that follows from the foregoing consideration is that the doctrine of the continued existence of the soul after death is true. If the universe is governed by a just God who is also all-wise and all-powerful, it follows that each man must meet with reward or chastisement according to his deserts. But that such is not the case in this life it needs but a small knowledge of history, or indeed experience of the world, in order to perceive. There are, it is true, some writers (mostly possessed of a good share of this world's advantages) who, owing to the exigencies of their philosophical position, venture to assert that each man during this life receives minute and exact retribution for every act, word, and thought. Such a doctrine, however, is a mere gratuitous and, indeed, superstitious dogma, utterly incapable of proof, opposed to the almost universally expressed conviction of mankind, and opposed also to the moral consciousness of many as to the events of their own lives. Our perception of what is just demands then for us, as moral beings, an existence after death. But does physical science, especially physiology, negative this belief? If so, in the presence of conflicting truths we are reduced to scepticism. But in fact no refinement of modern science affects it one jot or tittle more than does the fact known to every savage, "that when the brains were out the man would die." We have, however, seen in preceding chapters that Reason gives us cause to believe that structure and function are different aspects of one whole; that the force of any acting body (a steam-engine, an electrifying machine, a stinging-nettle, or a gorilla) is not something really distinct from the material thing and inhering in it, but is the thing itself acting—the dynamical aspect of the one cohering, living or sentient whole. Deeply considered, the difference between modern phraseology and that of an older school of philosophy may be said to be, that while for both schools matter and form (or force) are two sides of one whole, the modern school seems to consider the material side as the more important, and as determining the dynamical and formal side; while the older school regarded the dynamical and formal side as determining the material side. In this the older school seems to me to have the advantage, for how can the essentially statical part dominate and determine the essentially dynamical part? Even Mr. Lewes would regard the material side as the statical side or aspect of the whole unity! It may be replied that actions performed on living bodies abundantly demonstrate that the state of the material part determines the dynamical part. But, in the first place, it is impossible to act on the mere material of a living body, since everywhere you find both matter and form; and, secondly, it is not only the matter, but the dynamical action of other bodies which operate upon the living body supposed, and no one denies the mutual action of the dynamic powers of bodies.

Two phraseologies.

This, however, is but a remark made by the way, seeing that whichever be the dominant side or aspect it is conceded that in brutes the two arise, vary, and disappear simultaneously. Why then is it not absolutely necessary that the single force, form, or soul of man (which is with the body one unity as is the soul of a brute with its body) should similarly be annihilated with the structural change of death? The answer to this question has been prepared in the seventh chapter, wherein it was sought to make plain how vast is the difference between the single, rational activity, force, or form which acts in each living man—his soul—from the activity, force, or soul which shows itself in every living beast. The vastness of this difference becomes evident when we reflect on the fact that the human soul, as we experience it, here and now, is, in a sense, out of both time and space; that it exists now in the past or in the future as well as in the present; that it can think of both before time was, and after time shall end in eternity; that it can discuss the question as to the infinity or finitude of space, and consider the world of possibility as well as that of actuality; that though existing amidst a constant succession of changing conditions, it can think the eternal, unchanging absolute; that it knows itself as looking before and after, and as that which thinks and yet endures; that its self-conscious existence really persists in these conditions for years, i.e., that it is a spiritual substance; above all, that it can appreciate moral worth and elect to follow the less attractive of two competing motives, and so dominate and control the chain of physical causation by its free-will. All these considerations show that its nature is *far* more widely removed from the activity of an ape than is that of an ape from the activity of a magnet. And as the soul or activity of an ape differs in kind from the activity of a magnet, so the activity or soul of a man differs yet more in kind from that of an ape. It is by no means inconceivable therefore that the formal or dynamical element in the rational man may persist in another form after the dissolution of the body in a condition which we cannot of course imagine; indeed, as a spiritual substance, the inference is that it does so persist. Not only feeling, however, but memory, will, and even knowledge must of course cease to exist as we experience them, and herein lies the truth hidden in the assertions of those who deny the immortality of the soul. But because they will cease *as we experience them*, there is no need to think they do not persist in any form at all, especially if upon other grounds there is reason to think they do persist; and such reasons we have found in the demands of justice, in the power the soul possesses of transcending even here and now the limits of time, space, and physical causation, and in the perdurability of mind.

Consequences of rejecting Theism.

We may now pass to the second set of consequences which it is proposed to consider here, namely, those which follow the rejection of the positive beliefs which nature, through reason, it is here maintained, assures us are true with respect to the first and final causes.

If these beliefs be rejected, then either the mind must endeavour to sustain itself in the unstable equilibrium of a scepticism constantly tending to the stable conditions of affirmation or negation, and which position is practically already negative; or it must accept the negative position, whether in its Atheistic or its Pantheistic forms. As Mr. Spencer says ('Psychology,' vol. i. p. 466): "The neutral state of having no hypothesis, can be completely preserved only so long as the conflicting evidences appear exactly balanced: such a state is one of unstable equilibrium, which can hardly be permanent." Accordingly, the creeds commonly propagated (rather through insinuations, implications, and suggestions, than through direct and unequivocal assertions) by public opponents of the religious conceptions generally received amongst us to-day are of a more or less distinctly negative character.

However much we may regret the necessity, it is nevertheless simply impossible to note the existing phenomena of public opinion with truth and justice without making references of the kind which follow. For it is a fact that the Theistic conception (the belief in a personal God) is that which is now (sometimes openly, but more generally by implication) the main object of attack by means of a Materialistic or Pantheistic Propaganda, of which physical-science teaching is made the vehicle.

However dissonant in detail may be the opinions professed or the amount of reticence practised by the several individual teachers, a concordant harmony results from the general character of their utterances. With a loud profession of man's necessary ignorance is joined a confident assertion as to the course which would be pursued by a being of infinite power, wisdom, and goodness, did such a being exist, with an implicit or explicit denial of such existence.

Let us then note certain utterances of popular teachers of high standing which appear to have met with a very wide acceptance.

Professor Tyndall's teaching.

Professor Tyndall, in his treatise on 'The Constitution of Nature' (reprinted in his collected essays), to the question, "Was space furnished at once, by the fiat of Omnipotence, with these burning orbs?" replies:—

> "To this question the man of science, if he confine himself within his own limits, will give no answer, though it must be remarked, that in the formation of an opinion he has *better materials to guide him than anybody else*."—*Fragments of Science*, p. 6.

In his address to the students of University College, he tells them that the poet of the future

> "ought to be the interpreter of that power which, as 'Jehovah, Jove, or Lord,' has *hitherto filled and strengthened the human heart*."—*Ibid.* p. 106.

Again, in his paper on 'Vitality' he remarks:—

> "The most advanced philosophers of the present day declare that they ultimately arrive at a single source of power, from which all vital energy is derived; and *the disquieting circumstance is* that this source is *not the direct fiat of a supernatural agent*, but a reservoir of what, if we do not accept the creed of Zoroaster, must be regarded as inorganic force."—*Ibid.* p. 436.

Moreover, all this dogmatism is unaccompanied by one word of explanation as to the absence of any real necessary conflict between the action of evolution itself and the conception of its results being absolutely and primarily due to the "fiat of a supernatural agent."

Once more, in his little work on the 'Use and Limit of the Imagination in Science,' he expresses himself thus:—

> "Whence come we; whither go we? The question dies without an answer—*without even an echo*—upon the infinite shores of the Unknown.

Let us follow matter to its utmost bounds; let us claim it in all its forms to experiment with and to speculate upon. Casting the term 'vital force' from our vocabulary, let us reduce, if we can, the visible phenomena of life to mechanical attractions and repulsions. Having thus exhausted physics, and reached its very rim, the real mystery still looms beyond us. We have, in fact, made no step towards its solution. And thus it will ever loom—even beyond the bourne of knowledge—compelling the philosophies of successive ages to confess that

> "'We are such stuff
> As dreams are made of, and our little life
> Is rounded with a sleep.'"

Finally, the Professor says of the theory of evolution:—

> "Many who hold it would probably assent to the position that at the present moment all our philosophy, all our poetry, all our science, and all our art—Plato, Shakspeare, Newton, and Raphael—are potential in the fires of the Sun. We long to learn something of our origin. If the Evolution hypothesis be correct, even this unsatisfied yearning must have come to us across the ages which separate the unconscious primeval mist from the consciousness of to-day."—*Ibid.* p. 163.

No one can have more esteem for Professor Tyndall when teaching us concerning those coexistences and sequences of phenomena which his genius, energy, and perseverance have detected, than has the present writer. But Professor Tyndall, as a metaphysician, must be understood to court criticism by the authoritative and didactic tone which he has adopted in a field of battle he has gone out of his own special line to seek. It may then well be asked, what is the creed, what are the lessons likely to be learned by young or inquiring minds from this scientific catechism? What will be gathered from such passages as those referred to (which are not elsewhere retracted or explained away by their author), from that which they inevitably imply, as well as from that which they actually express? For while religious belief retains its social power in any country, those who attack it will generally, more or less, veil their hostility, and seek by implication, insinuation, or studied silence, to produce an effect far exceeding that openly aimed at by their express words. As far as I understand Professor Tyndall, and I am anxious to state his views with the utmost fairness, the following are the conclusions at which he arrives :—

I. It is professors of physical science who in the future are to be the supreme Pontiffs, better qualified "than anybody else" to judge the highest questions of philosophy and religion, though the actual interpreters of the unknowable are to be the poets.

II. It is doubtful whether the duly instructed can longer have their "hearts strengthened" by the conception of the First Cause as "Jehovah," or even as "Lord."

III. The Patres Conscripti, or rather the Pontifices Maximi, have dogmatically defined and decreed, that there is one "single source of power from which all vital energy is derived"—an "inorganic force."

IV. The inquiry as to the origin and the end of human life is fruitless, and, therefore, the effort to discover our proper aim is an endeavour to solve what is hopelessly insoluble.

V. Nevertheless we do come from a fire, such as that of the sun; and love, charity which "thinketh no evil," humility, piety, and holiness are essentially derived from the heat, and are merely different "modes of motion."

Mr. Spencer's teaching.

Let us now turn to the teaching of "our great philosopher," as Mr. Darwin styles him. Mr. Herbert Spencer, in his 'First Principles,' distinctly tells us, that Theism is not only incredible but inconceivable (p. 43), and that "every form of religion" is not "even thinkable" (p. 46).—In the place of God we are presented with "the *unknowable!*" To the very natural objection that thus an emotionless and "unthinkable abstraction" (p. 114) is offered to us, "instead of a power which we can regard as having some sympathy with us," we are quietly and coolly told, "this kind of protest of necessity accompanies every change from a lower creed to a higher;" "No mental revolution can be accomplished without more or less of laceration" The same writer, in an article in the 'Fortnightly Review,'* makes clear his belief that our highest aspirations after holiness, and love of eternal goodness and beauty, are nothing but modified brutal instincts of the lowest kind, developed by experience and utility. Altogether, the teaching of this philosopher, comprises the following dogmas:—

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* For April 1871.

I. Theism is false and absurd.

II. Rewards and punishments in a future life are the delusions of superstition.

III. Prayer is an absurdity, as there is no God having any personal sympathy with us.

IV. There is no difference of kind, but only of degree, between the intellect of a sage or the emotions of a saint, and the psychical faculties of a mud-fish.

V. There is no such thing as free-will. No man having any more real option as to his thoughts and intentions than has a leaf to resist the action of the wind.

Professor Huxley's teaching.

If Mr. Spencer is more or less extensively esteemed as a teacher, a far wider acceptance is enjoyed by the eminent naturalist Professor Huxley, who has of late wandered beyond his special subjects of exposition, into the wider fields of ethics, politics, and metaphysics. It is difficult to exaggerate the importance of a teaching, followed and accepted with so much avidity by a large section of the middle and lower classes, and it will be well to consider carefully the dicta put forth by so popular an authority—an authority, moreover, by no means relying upon the power of persuasion or the force of truth, but ready, as soon as practicable, to call in the aid of the "secular arm" to give effect to the anathemas of a "scientific syllabus."

In Professor Huxley's 'Lay Sermons,' the following passages occur:—

> "I say that natural knowledge, seeking to satisfy natural wants, has found the ideas which can alone still spiritual cravings."—p. 14.

The Gospel enunciated by this Evangelist, is, after all, anything but "good tidings." The Professor tells us:—"In this *sadness*, this consciousness of the limitation of man, this sense of an open secret which he cannot penetrate, lies the *essence of all religion*" (p. 15). The familiar phrase "serious views," is very inadequate to express the deep depression of the creed proposed to us in place of that which tells us, "Rejoice always, and again I say unto you rejoice." Mr. Spencer's expression for first cause is fully accepted, as we are told, as to the Unknowable that we "*know* (!), to our cost, that he never overlooks a mistake, or makes the smallest allowance for ignorance" (p. 36). Again we read:—

> "Were mankind deserving of the title 'rational,' which they arrogate to themselves, there can be no question that they would consider, as *the most necessary* of all branches of instruction for themselves and for their children, that which professes to acquaint them with the conditions of the existence they prize so highly—which teaches them how to avoid disease, and to cherish health in themselves, and those who are dear to them."—p. 98. "It becomes clear that all living powers are cognate, and that all living forms are fundamentally of one character."—p. 142.
>
> "Even those manifestations of intellect, of feeling, and of will, which we rightly name the higher faculties, are . . . . to every one but the subject of them, known only as transitory changes in the relative positions of parts of the body."—p. 135.

In the first place we should be glad to know, on what principle Professor Huxley considers one human mental manifestation "higher" than another; but letting this pass, surely "known *by means of* changes of position" would be the more correct form of expression. Yet sometimes the Professor does not scruple to go beyond the facts of phenomena into the regions of abstractions and occult causes as freely as his neighbours. Thus he tells us:—"We do not hesitate to believe that, in some way or another," the properties of water "result from the properties of the component elements of water" (p. 150). It is difficult to understand this bold assertion on Professor Huxley's own principles. At other times he does not scruple to ignore, and practically deny, what is evident to the reason, though hidden from the sense, as when he tells us that:—

> "A nucleated mass of protoplasm turns out to be what may be termed the structural unit of the human body. As a matter of fact, the body, in its earliest state, is a mere multiple of such units; and, in

its present condition, it is a multiple of such units, variously modified." —p. 140.

Yet who can doubt that in the living body there is a latent, active principle wanting in the recent corpse, though composed of the same identical masses of nucleated protoplasm?

The Professor has of late become the expositor of the idealist philosophy, according to which mental phenomena are to each individual most unquestionably *the* primary objects of knowledge, and yet he tells us "it is obvious that our knowledge of what we call the material world, is, to begin with, at least as certain and definite as that of the spiritual world" (p. 155). And more recently * he has said, as to "psychoses" and "neuroses," "The right view is that they are connected together in the relation of cause and effect, psychoses being *secondary*, and following on neuroses!"

We next meet with the following passage:—

> "If a man asks me what the politics of the inhabitants of the moon are, and I reply that I do not know; that neither I, nor any one else, have any means of knowing; and that, under these circumstances, I decline to trouble myself about the subject at all . . . in replying thus, I conceive that I am simply honest and truthful, and show a proper regard for the economy of time. So Hume's strong and subtle intellect takes up a great many problems about which we are naturally curious, and *shows us* that they are essentially questions of lunar politics, in their essence incapable of being answered, and therefore not worth the attention of men who have work to do in the world."—p. 158.

He then quotes Hume saying:—

> "If we take in hand any volume of divinity, or school metaphysics, for instance, let us ask, *Does it contain any abstract reasoning concerning quantity or number?* No. *Does it contain any experimental reasoning concerning matter of fact and existence?* No. Commit it then to the flames, for it can contain nothing but sophistry and illusion."—p. 159.

Professor Huxley adds:—

> "Permit me to enforce this *most wise* advice. Why trouble ourselves about matters of which, however important they may be, we do know nothing, and *can* know nothing?"—p. 159.

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* In his last lecture at the Finsbury Institution, given in the winter of 1872.

This amounts to a deliberate advice and injunction to his hearers to cast aside every thought or care respecting God, their own souls or a future existence. It is noteworthy that this dogmatic statement, this *certainty* as to what is *possible* to our faculties, is put forth by one who also tells us that even "of the existence of self" we have not, nor "can we by any possibility have," the highest degree of certainty (p. 359).

Finally, in his address to the members of the Midland Institute he remarks:—

> "I take it that the good of mankind means the attainment, by every man, of all the happiness which he can enjoy, without diminishing the happiness of his fellow-men."

And,

> "If we inquire what kinds of happiness come under this definition, we find those derived from the sense of security or peace; from wealth, or commodity, obtained by commerce; from art; from knowledge, or science; and, finally, from sympathy or friendship."

And here we must remark, in spite of his contact with many working men, how utter must be the Professor's lack of acquaintance with the real life of the poor, thus completely to exclude from the catalogue of human happiness all considerations of religion, its hopes, its stimulus, its consolations. Had he but practised that profession which counts him amongst its members, he could hardly have failed to encounter amongst the sick and suffering some poor souls whose one stay and consolation, amidst a crushing accumulation of earthly woe, has been a trustful belief in a heavenly Father's love, and the prospect of a supernatural union with Him in the life beyond the grave.

As before, we may lay down the following propositions as the summary of Professor Huxley's moral and religious teaching:—

I. Physical science is the one only fountain at which spiritual thirst can be quenched.

II. Sadness is of the essence of religion.

III. The First Cause is inexorable and pitiless.

IV. It looks with favour on the learned Dives, not on the poor and ignorant Lazarus.

V. Physical welfare and happiness are the *summum bonum.*

VI. Security, wealth, culture, and sympathy are the only rational objects of pursuit.

VII. All aspirations or efforts after Divine things—the love of God or beatitude in a future life—are simple waste of time, if not worse, and are fit only for lunatics.

VIII. Knowledge of all such subjects is impossible to us.

Other declarations.

If we were to pursue the inquiry from the pontiffs down to the acolyths and ostiarii of the non-theistic hierarchy, far more exaggerated expressions could easily be produced, tending to drive further home the principles insinuated by their leaders. Thus Mr. Barratt, in his 'Physical Ethics,' tells us nakedly that "no pleasure is bad, except when it means pain," and that "the good is pleasure." Mr. Winwood Reade, a friend and ardent disciple of Mr. Darwin, very pithily states the ultimate conclusions of his recent work, which deals with so wide a field, and is entitled the 'Martyrdom of Man.' He therein tells us: "God-worship is idolatry; prayer is useless; the soul is not immortal; there are no rewards, and there are no punishments in a future state." Of course Mr. Reade fully adopts Mr. Darwin's views as to the bestiality of man; and indeed almost, though quite involuntarily, caricatures the teaching of his master regarding our ape-origin.

Such crude views, "*le rationalisme grossier*," and its grotesque pretensions to intellectual eminence, have been thus characterised by Mr. James Stirling:*

> "'There was a time,' says Hegel, 'when a man who did not believe in ghosts or the devil was named a philosopher!' But an 'advanced thinker,' to these distinctions negative of the unseen, adds—what is positive of the seen—an enlightened pride in his father the monkey!

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* See 'Fortnightly Review,' for November 1871, p. 539.

> He may enjoy, perhaps, a well-informed satisfaction in contemplating *mere material phenomena that vary with conditions*, as the all of this universe, or he may even experience an elevation into the moral sublime when he points to his future in the rock, in the form of those bones and other remains of a *Pithecus intelligens*, which, in all probability (he reflects), no subsequent intelligence will ever handle—but monkey is the pass-word! Sink your pedigree as man, and adopt for family tree a procession of the skeletons of monkeys—then superior enlightenment radiates from your very person, and your place is fixed—a place of honour in the acclamant brotherhood that names itself 'advanced'! So it is in England at present; this is the acknowledged pinnacle of English thought and English science now. Just point in these days to the picture of some huge baboon, and suddenly—before such enlightenment—superstition is disarmed, priests confess their imposture, and the Church sinks—beneath the hippocampus of a gorilla."—*The Secret of Hegel*, Preface, p. xxxi.

These words express truly enough a state of opinion still but too widely prevalent in England. We need not be without hope, however, that ere long a more general diffusion of a truer philosophy will cause the essential difference between the psychical natures of man and of brutes to be more clearly apprehended. Then a belief in the bestiality of man will very soon pass away into the limbo of discarded physical superstitions.

It would indeed be well if some of those who so recklessly advocate popular teaching, such as that we have called attention to, would ponder over the utterances of continental infidels, in order that they might see the logical outcome of those same popular teachings; for it is continental writers who most fearlessly develop their principles to their full results.

Guillaume Marr, a journalist of Lausanne, in a general report addressed to the *Conseil d'État* some years ago, dared to assert as follows:—

> "Faith in a personal and living God is the origin and the fundamental cause of our miserable social condition. . . . . The true road to liberty, to equality, and to happiness, is atheism. No safety on earth, so long as man holds on by a thread to Heaven. Let nothing henceforward shackle the spontaneity of the human kind. Let us teach man that there is no other God than *himself*; that *he* is the Alpha

and the Omega of all things, the superior being, and the most real reality."

Again, Caro observes:—

> "Science conducts God with honour to its frontiers, thanking him for his provisional services."—*L'Idée de Dieu*, p. 47.

Feuerbach tells us plainly:—

> "Les antichrétiens, les athées, les *humanistes* (qui ne reconnaissent d'autre Dieu que l'humanité) aujourd'hui sont bien maltraités; mais ayons bon courage; l'athéisme humanitaire n'est plus dans les camarillas des grands seigneurs riches et fainéants, comme au xviiiᵉ siècle, il est descendu dans le cœur des travailleurs qui sont pauvres, *des travailleurs d'esprit* comme des travailleurs de bras; *il aura sous peu le gouvernement du globe.*"—*Qu'est-ce que la Religion?* p. 586.

Another writer of the same school remarks:—

> "Les feuilletonistes français qui prétendent attaquer les moines, ne voient pas qu'ils font cause commune avec eux, puisqu'ils admettent, comme eux, l'article fondamental, *la notion de conscience morale et la distinction du bien et du mal.* Le plus célèbre d'entre eux n'est lui-même qu'un poëte jésuitique. Les seuls opposant véritable à l'imposture religieuse, c'est nous et nos doctrines purement et radicalement négatives."—GRATRY, *Une Étude sur la Sophistique contemporaine*, p. 153.

General result.

Returning to our English physical expositors before quoted, we may now sum up the teaching in which they appear to concur, or at least the teaching which is the ultimate and logical outcome of their expositions—the dogmas which can hardly fail to impress themselves upon the minds of their disciples who follow them with so simple and unhesitating a trust. They may be drawn up as follows:—

I. Temporal happiness is the one rational aim of life.

II. A positive belief in God and a future life is an unwarrantable superstition.

III. Virtue and pleasure are synonymous, for in root and origin they are identical.

IV. Men are essentially but brutes, no differences of kind dividing them.

V. The cause of all things has not personality, and consequently neither feeling, nor intelligence, nor will.

VI. All who pretend to teach religion are impostors or dupes.

VII. Our physical-science teachers are the supreme exponents of all truth, and the ultimate arbiters of all actions.

VIII. There is no such thing as real merit or demerit, as all our actions are absolutely determined for us, and free-will is the most baseless of delusions.

It is possible that one or other of the writers here noticed may object to what has been said on the ground that their words may be understood in some other sense, and that some other passages of their writings may be taken as having another meaning. But if it be conceded only that it is possible that God exists, then in the presence of such possibility men are bound not so to write as to be readily understood as opposing theism, while contenting themselves with having somewhere emitted a sentence of less equivocal tendency. As well might men leave bottles of strychnine and prussic acid about in an infant school and excuse themselves because they had labelled each bottle with the word "poison," in Greek. If God exists at all, He is manifestly not to be patronised by a few obscure, ambiguous phrases which writers may condescend to accord Him; and such writers, if they really believe in Him, are bound to declare their conviction with no uncertain sound.

The doctrines just passed in review acquire an additional importance from another characteristic of the anti-religious school, which is rapidly becoming more manifest—prudential disguise being discarded, as no longer necessary.

Intolerance of modern infidels.

A short time ago it might have been contended that these speculations, however calculated to damage individuals, were not of immediate political importance. The unsuspecting might have contended that these physical dogmatists were all "liberals," and that therefore no hindrance to free inquiry, or the untrammelled propagation of truth, need ever be apprehended at *their hands,* and that with a fair field and no favour truth must prevail.

Indeed, Mr. Herbert Spencer* speaks of "That spirit of toleration which is so marked a characteristic of modern times, and is daily growing more conspicuous," and says:—

> "Our toleration should be the widest possible; or rather, we should aim at something beyond toleration, as commonly understood. In dealing with alien beliefs our endeavour must be, not simply to refrain from injustice of word or deed, but also to do justice by an open recognition of positive worth. We must qualify our disagreement with as much as may be of sympathy."—*Ibid.* p. 122.

These are sentiments which, were they universal, would make such considerations as we are attempting to bring forward in this article less imperative. It is greatly to be feared, however, that this benevolent prediction as to the increase of toleration has as little foundation in truth as had the philanthropic anticipations that war was at an end when the first International Exhibition of 1851 was opened. The acts of the Commune do not certainly breathe a very tolerant spirit, to say nothing of "sympathy with opposite opinions;" and sentiments kindred to those of the French Communists are now being sown broadcast not only over the continent of Europe, but even in our own country also. Apart, however, from political convulsions and popular passions, the writings of recent or existing physical teachers contain enough to warn the Christian world to prepare in time for the advent of an atheistic persecution. Thus Comte, in his 'Philosophie Positive,' gives utterance to principles of persecution sufficiently unmistakable. He tells us:—

> "Il n'y a point de liberté de conscience en astronomie, en physique, en chimie, en physiologie même, en ce sens que chacun trouverait absurde de ne pas croire de confiance aux principes établis dans les sciences par les hommes compétents."

Professor Huxley, who quotes these words, speaks of the organised spiritual power which, according to Comte, was to have supreme control over education in each nation, as most

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* 'First Principles,' p. 120.

"completely sacerdotal" and "entirely anti-scientific," and adds* that "the logical, practical result of this part of his doctrine would be the establishment of something corresponding with that eminently Catholic, but admittedly anti-scientific, institution—the Holy Office." ('Lay Sermons,' p. 190.)

Another utterance comes from France with a warning in the same direction, and from one whose orthodoxy cannot be suspected of having sharpened his apprehensions as to the future. M. Ernest Renan† speculates as to whether "l'avenir ne ramenera pas quelque chose d'analogue à la discipline ecclésiastique que le libéralisme moderne a si jalousement supprimée."

The Duke of Argyll,‡ commenting on Mr. Lewes's dictum that "whatever is inaccessible to reason should be strictly interdicted by reason," observes: "Here we have the true ring of the old sacerdotal interdicts. Who is to define beforehand what is, or what is not, 'inaccessible to reason.'?"

The same intolerance of freedom, even in the region of pure speculation, is shown by a writer in the 'Westminster Review' (for October 1873, p. 398), who, speaking of the modern man of science, tells us: "Above all things he is silent in the presence of truths (or falsehoods) which he has *ascertained* to be beyond HIS reach. And he COMMANDS equally in respect to these *silence* on *all others of mankind*." These Agnostics, in their hostility to those whose vision is less limited, recall the complaint of Béranger's Owl as to the enmity he innocently excited: "*Parceque j'y vois clair la nuit.*"

But the most portentous phenomenon of this kind is the open avowal of intolerance, and the direct advocacy of persecution of religious opinions by no less a "liberal" than Professor Huxley, whose reprobation of the very same views as expressed by Comte we have just quoted. Indeed, he has repudiated that reprobation and distinctly contradicted his previously expressed views, in his address to the Midland Institute, wherein he has quoted both Comte and Plato approvingly, and speaks with scorn of that "pet doctrine of modern liberalism," that "toleration" is "a good thing in itself, and ought to be reckoned among the cardinal virtues."* He has added the remarkable words: "I do not see how *any limit whatever* can be laid down as to the extent to which, under some circumstances, the action of government may be rightfully carried;" and has asked the question: "Are we not bound to admit, with Locke, that it [i.e. the State] may have right to interfere with 'popery and atheism,' if it be really true that the practical consequences of such beliefs can be proved to be injurious to civil society?" †

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* Professor Huxley adds the singular remark that "the great teaching of science—the great use of it as an instrument of mental discipline—is its constant inculcation of the maxim, that *the sole ground on which any statement has a right to be believed is the impossibility of refuting it!*" According to this, we have ground for believing that a green dragon inhabits the sun, since such a proposition it is quite impossible to refute.

† 'S. Paul,' p. 392.

‡ 'Primeval Man,' pp. 21-23.

A deprecation of any opposition to this intolerance on the ground that the suppression of only that which is "demonstrably" injurious is thereby justified cannot be admitted. It cannot be admitted, because the mere fact of theological opinions being opposed to the Professor's own may be quite enough to render them, in his eyes, "demonstrably injurious," and thus justify their forcible repression. In principle this carries equally with it the right of the State to persecute *Theists.*

We have seen that, according to the teaching Professor Huxley favours, all religious speculation and action is but waste of thought and effort. It cannot be for the advantage of the State that time and endeavour should be thrown away in a manner worthy only of lunatics; consequently all who would promote such loss should be discouraged and put down. "The logical, practical result" (to quote Professor Huxley's words respecting Auguste Comte) "of this part of the doctrine would be" what he invidiously calls, "the establishment of something corresponding with the Holy Office"—in fact, a Star-chamber of physically scientific inquisitors sitting in judgment on, and condemning, parents who had dared in private secretly to teach their children to worship God.

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* See 'Fortnightly Review,' for November 1871, p. 532.

† *Ibid.* p. 538.

Atheism inconsistent with toleration.

The naked avowal of the principle of thorough-going persecution by so prominent a "liberal" has surprised many, but, in truth, we think the Professor has here shown himself to be both logical and rational. Except upon a basis of intuitive morality and the relation of the conscience to God, there is and can be no solid basis on which the rights of minorities can securely repose. The natural and necessary alliance between atheism and the most extreme and hardest form of despotism—a despotism like that of the Pagan empire, ignoring conscience altogether—was empirically manifested in France in 1793 and 1870; and it is a characteristic circumstance that Professor Huxley refers to and quotes the congenial authority of Hobbes, who, "with a true instinct, would have laid deep the foundations of atheism and despotism together, resolving all right into might, and not merely robbing men, if he could, of the power, but denying to them the duty, of obeying God rather than man."* Christianity and Judaism, by preferring martyrdom to apostasy, first taught men the rights of conscience, and may be destined to repeat the lesson a second time in opposition to a revived paganism, and as a result, of a new temporary persecution by it of the Christian Church.

Practical consequences.

We may now turn to the consideration of the third set of consequences, namely, the practical tendencies resulting from the reception of a Non-theistic Philosophy.

But here the objection may be made that science and philosophy have no concern for consequences. Professor Huxley, at Belfast, has proclaimed that he does not care for them; and physical philosophers generally protest that they care only for "truth," which at all hazards must unhesitatingly be investigated and pursued. Now such a protest and declaration is reasonable enough in the mouths of those who accept the philosophy here advocated. *We* can reasonably proclaim the supreme importance of truth and the expediency of its unhesitating, continuous, and unlimited pursuit, because of the conviction that the universe is the work of a good God. But it would be interesting to know on what rational grounds philosophers who *oppose* Theism could support *their* conviction that truth is *necessarily* a good—how they can logically assert this without the belief that the Cause of all things is necessarily a God of truth. Experience may show that truth has been generally beneficial, but it can never make its beneficence axiomatic, or render it impossible that in certain cases "ignorance" may not be bliss, "wisdom" "folly," and "deceitfulness" expedient.

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* Archbishop Trench: 'The Study of Words,' p. 171.

Is truth necessarily desirable?

Theists may, indeed, confidently exclaim—

"*Magna est veritas et prevalebit;*"

but the experiences which history makes known to us amply support the declaration—

"*Magnum est mendacium et prevaluit.*"

Nor can the merely temporary nature of its prevalence be logically maintained as a certain truth by any non-theist.

Certainly, if such views as those of Mr. Mill, Mr. Spencer, and Professor Huxley as to the impotence of the human will were true, the only hope of humanity would be that it should "believe a lie." For as human moral progress has been effected hitherto under the belief in moral responsibility, it is unquestionable that were men universally convinced and able fully to realise that such responsibility is a delusion, and that their every thought is absolutely predetermined, a general paralysis of moral effort must necessarily ensue.

It is undeniable then that all non-theists who wish well to their fellows need to examine with scrupulous anxiety and care the tendencies and probable consequences of their utterances, however convinced they may be that such utterances are true.

Some propositions with ethical applications.

But let us look a little closer at some modern teaching likely to affect conduct. Dr. Lewins tells[*] us:—"Earth *is* Paradise if the healthy operation of every anatomical structure could be preserved. . . . All that is fabled by poets, saints, martyrs, founders of sects and systems, under the term Saturnian, or Golden Age, Kingdom of Heaven, Paradise, &c., is comprehended in that supreme *bien être* which results from the equilibrium of the bodily functions." Harmonizing with such declarations and with that exaggerated estimate of brute existence now so popular, is the teaching of Professor Ed. V. Hartmann. This expositor of science, impregnated with antichristian philosophy, teaches[†] as follows:—"It is important to make beast life better known to youth as being the truest source of pure nature, wherein they may learn to understand *their true being* in its simplest form, and in it rest and refresh themselves after the artificiality and deformity of our social condition." Again he tells[‡] us:—"The individuals of the lower and poorer classes and rough savages, are happier than the instructed and well-to-do classes." And he goes on to affirm that similarly brutes are happier than men; ending with the remarkable sentence: "Let us only think how *agreeably* an *ox* or a *hog* lives, almost as if he had learned to do so from Aristotle." Here we have an actual modern resurrection of that old Pagan frame of mind satirized by Dr. Newman in the soliloquy of Jucundus:[§]—

"Enjoyment's the great rule: ask yourself, have I made the most of things? . . . I've often thought the hog is the only really wise animal. We should be happier if we were all hogs. Hogs keep the end of life steadily in view."

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[*] 'Life and Mind,' by Robert Lewins, M.D.
[†] 'Philosophie des Unbewussten,' p. 359.
[‡] *Op. cit.* p. 712.
[§] 'Callista,' pp. 48, 49.

One of the greatest of the achievements of the last two thousand years has been the successful promulgation of the doctrine that *purity of intention*, and not success, is that which is really deserving of esteem. Yet the essential heartlessness of Non-theism is showing itself, every now and then, in its true colours. To show this the more clearly, we may quote the words of one who, in so many ways, contrasts favourably with other members of that school of thought. The exigencies of his philosophical position have betrayed even Mr. Herbert Spencer into speaking* of the "Worthy" and the "Unworthy" as synonymous with the "well" and the "ill-to-do;" and he does not guard himself from being understood to call the poor and the unsuccessful by the opprobrious epithet, "good-for-nothings."

Purity of intention.

Another phenomenon of the last eighteen hundred years has been the establishment of at least a pure theory of the sexual relations, and the protection of the weaker sex against the selfishness of male concupiscence. Now, however, marriage is the constant object of attack, and unrestrained licentiousness theoretically justified. The promiscuous intercourse of some degraded tribes is often spoken of under the term "communal *marriage*," and the cause of "free-love" is, of course, directly promoted by every phrase which tends to assimilate in terms the two very distinct states, and so pave the way for their legislative assimilation. And it is very natural it should be so. Cumbrous and involved must be the reasoning of any one who, while denying (as the advocates of the bestiality of man must deny) any real distinction between duty and pleasure, would at the same time seek to maintain the stringency of existing sexual customs on the basis of mere expediency. Once admit this expediency, i.e., the promotion of the physical welfare of the race, to be the one only rule of conduct, and the door is opened for the free ingress of the strangest propositions. Once deny the distinction between material and formal morality—once, that is, identify in essence

Sexual relations.

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* 'Contemporary Review,' August 1873, p. 339.

and origin duty with pleasure—and the social maxims which may be put forward and defended are somewhat startling.

I am myself acquainted with a gentleman of very high culture and very advanced views, who deliberately maintains (although his own life is like that of other Englishmen) that it would be a great benefit to propagate in modern society customs of Pagan Greece and Rome which are generally looked upon as specially revolting, advocating them on strictly utilitarian principles.

Conduct in public men less influential than teaching.

The justice of such remarks as these is sometimes very irrationally disputed on account of the personal virtues of men who may profess Anti-theistic views. But if leaders or propagators of the Non-theistic philosophy are men who lead a life materially moral, it is only *so much the worse.* It is so much the worse, because such a life is the means of giving far greater currency to dangerous views, the very dangers of which such a life more or less disguises. Of two men, one leading a life of this moral kind, but influentially propagating the Agnostic philosophy, and another simply leading a grossly sensual one, which does the most harm to others? There cannot be a moment's dispute about it. The most profligate of men can by his personal conduct corrupt but a few; but the Agnostic who, by his publications, tends to sap the basis of *all* morality spreads corruption far and wide, not only in his own, but in succeeding generations also. However warm may be our personal regard for such an Agnostic, however much we may enjoy his society, or appreciate his warm-heartedness, we must none the less confess that, absolutely and in fact, he is one of the worst enemies of the human race. Regret it as we may, there is no rational way of avoiding such a judgment.

Again, let us suppose, for argument's sake, that Christianity is true; let it be granted for the same reason, *per impossibile* or *per absurdum*, that there is a living personification of the principle of evil. Would such a being for a moment allow serious temptation to come in our Agnostic philosopher's way? Would he not scrupulously guard him from any such peril, lest perchance a shameful fall might develop some latent germ of humility in him, the existence of which might be discernible by such preternaturally acute vision?

An objection to legal restrictions on marriage.

With respect to proposed restrictions on the marriage of those who cannot bring proofs of freedom from disease not only in themselves but in their ancestors, some remarks made by Dr. Samuel Wilks, F.R.S., may be quoted. They are on *the study of the human mind from a physiological view*, and appeared in the January number of the 'Journal of Mental Science' for 1875. He there says:—

> "Has the time arrived in which we could adopt any of those rules in the choice of marriages which can be followed in the breeding of animals, as is suggested in 'Lothair?' 'It is the first duty of the State to attend to the health and frame of the subject. The union of the races concerns the welfare of the commonwealth much too nearly to be intrusted to individual arrangement.' The subject has been lately developed in one or two essays, and more especially in reference to the mixture of the insane element into human society. In reference to this it must be said, that at the present time we have not sufficient knowledge of temperaments, under what conditions they arise, and, in fact, how they are produced; nor do we know, when regarding certain temperaments, how the good and bad are intermingled; that is, how with what we call morbid tendencies there may not be important bodily and mental characteristics and activities of great value. One kind of person whom England is apt to produce some would purposely avoid as being liable to gout, with all its attendant evils; and yet, though gouty, he is a vigorous, active, independent man. Another kind of person, whom we call consumptive, and which England is also especially apt to produce, would be avoided; and yet there is in him often a wonderful activity. Then again, if the person inclined to insanity is the one above all to be shunned in a marriage connection, it might turn out that we were losing some of the best blood of the country. It is no doubt fearful to think of a man or woman marrying with a strong taint of insanity, and bringing into the world a family of lunatics; but it does not follow that an infusion of the insane blood may not be desirable."

And he tells us:—

> "I believe Dr. Maudsley has also expressed this opinion. I think it might easily be shown that such infusion has given genius to a

whole family; it has leavened the whole mass. There may be an intellectual element which in moderation is good, and in excess is none other than madness, in the same way that common sense may find its acme in an inactive dolt. It is this very case of the supposed value of getting rid of the insane element in society that would make me hesitate before I offered any restrictions to marriage, or dared to dictate to my fellow-creatures as to the impropriety or otherwise of mixing certain temperaments."

Consequences as regards popular education.

Amongst important practical consequences of the spread of such non-theistic, i.e., irreligious views as those noticed in this chapter, is the eager demand for "secular education," in what is the present real signification of that term.

The current of popular feeling which now runs in favour of State education is as yet too strong to allow anything like a fair hearing to the weighty arguments by which Mr. Herbert Spencer disputes the justice and denies the expediency of any such State action *at all*. Nevertheless, only a very small minority will probably persist in advocating the education of all poor children at the expense of parents generally in the tenets and dogmas of one, as yet, very inconsiderable sect—that of the Secularists—when once they fully understand that this is the result of "secular" or "unsectarian education." At some future day it may, indeed, hardly be deemed credible that attempts should have been made in England, in the middle of the nineteenth century, to force a majority of Englishmen to pay for the education of their children in a creed utterly hostile to that which their parents profess, and this too in the name of "freedom."

It is not here contended, however, that truly "secular" instruction cannot fairly and innocently enough be one day given. But whether it can be so given or not will depend upon the question whether the influence of the non-theistic philosophy is at the time dominant. What *is* contended is that existing conditions do not admit of such a process, and that to attempt it is to attempt a most gross and flagrant injustice.

Mr. Henry Holbeach may be cited as an unprejudiced witness in this matter. He tells* us:—

> "The great majority of scientific men at the present time pursue a purely positive method, and the primary *assumptions* of that method are fatal to all theological conceptions. It should not need much argument to show that they are, at lowest, fatal to any theological conceptions such as those upon which Christianity as a system is necessarily engrafted. Now a professor might preach an orthodox sermon every Sunday, subscribe Sir Roundell Palmer's pledge *ex animo*, and have Christian prayers before and after class, and yet, if he taught science after the manner of Büchner, he would be opposing not only Christianity, but Theism, with the whole stress of his mind, and his pupils would, at the best, turn out sceptics. . . . . Those, if any, who imagine that these characteristic features cannot and would not of necessity be introduced into the 'secular' teaching of the young under State sanction—who think that an anti-theological *animus* cannot be made effective in the instruction given to children—are very much mistaken . . . . . But besides all this, it is certain that the scientific teaching all over the world is so. . . . . Vain is it to reply, these are not *questions brûlantes*. They are not, and they are; and if they are decided in favour of state-applied education on the secular basis, they simply introduce the thin edge of the wedge; and after the whips will come the scorpions; after the deeds in the green tree the deeds in the dry. And we should have, already, this state of things:—Paid for in part by the religious classes, compulsory secular teaching, that is necessarily pervaded by a spirit which they regard as anti-religious."

The Rev. William Mackintosh.

An attempt has recently been made to meet this difficulty by the Rev. William Mackintosh,† who proposes the introduction of an ethical teaching apart from religion—a moral catechism divorced from theology. He indeed throws overboard the absurd notion of teaching the Christian religion in general, but no special form of it in particular. He says:—

> "If by way of removing all ground of complaint and offence we eliminate from the teaching of Christianity all debatable matter concerning which the sects take different views, there remains little to be communicated in the name of religion. . . . . It would be easy to demonstrate that the chimerical character of so-called unsectarian, or undenominational teaching cannot be remedied by leaving its administration to the discretion of the teachers, as has been proposed."

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* 'Contemporary Review,' April 1872.

† See 'Contemporary Review,' January 1874.

He proposes[*] a manual to inculcate "the common, universal, personal and social duties . . . . and that other doctrine of an Unseen Power which presides over all . . . . Such a manual," he says, "would lead up to religion, or place the children in its vestibule, but take them no further."

Now doubtless such a course as that proposed, if really practicable, might have, in our religiously divided condition, certain advantages, and it is by no means impossible that in the future something of the kind may be attained, but it will not be by the exclusion of religion, which is unconsciously *in*cluded by Mr. Mackintosh, while attempting actually to *ex*clude it—the above-quoted phrase, "an Unseen Power which presides over all," means either nothing, or it means a whole system of profound dogmatic theology. This phrase seems to be a concession to the nonsense of Mr. Matthew Arnold about "a stream of tendency," "an Eternal, not ourselves, making for righteousness." As to which Mr. Henry Dunn[†] exclaims: "'We ought not to speak of God as a Person, one who thinks and loves,' says Mr. Arnold, for this tends to make us think of God 'as if He were a magnified and non-natural man in the next street.' . . . . . But how, except it be under human conditions, can I know what is meant by the 'Eternal, not ourselves, making for righteousness'? . . . . I am told I must not talk of God as one who loves, because the relation of God to man, so understood, is not *verifiable* . . . . Quite as verifiable, I think, as are the statements that 'the enduring power around us makes for righteousness, &c.'"

Mr. Mackintosh, of course, does not propose that the children shall repeat the phrase, "an Unseen Power which presides over all," without attaching *any* meaning to their articulations. Mr. Mackintosh means by it, of course, God as understood by natural theology. A "Power" which can neither know the children nor be known by them, which must therefore be supposed destitute of every really moral attribute (presiding over the universe as the sun presides over the solar system), *can* have no moral influence on their minds, and might as well be altogether omitted.

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[*] *Loc. cit.* p. 261.

[†] 'Brief Notes on Mr. Matthew Arnold's Literature and Dogma.'

It is impossible to avoid theology. A man must either believe that God exists, or that He does not exist, or that His existence is unknowable, or possibly knowable, but to him unknown; and each one of these beliefs is in fact a dogma, pregnant with the most momentous consequences. Similarly, as regards a future life, a man must hold either that he has, or that he has not, grounds sufficient for acting in this life with a direct view to the next. One of these two beliefs is just as dogmatic as the other, both will be fruitful in effects; while to bring up children in silence as regards a future life is equivalent to teaching them that the second belief is the true one.

Then as to mere morals, what would Mr. Mackintosh have the children taught as to their duties to this Unseen Power itself? If they are taught nothing, no irreverence need surprise us: why should they reverence anything indefinitely *beneath* themselves?

Here, as in so many other lines of thought, Mr. Herbert Spencer's declarations boldly oppose popular superstition. Ridiculing the prevalent educational notions on this subject, he exclaims: * "See here the proposals and the implied beliefs. Teaching by clergymen not having had the desired effect, let us try teaching by schoolmasters. Bible-reading from a pulpit, with the accompaniment of imposing architecture, painted windows, tombs, and 'dim religious light,' having proved inadequate, suppose we try Bible-reading in rooms with bare walls, relieved only by maps, and drawings of animals . . . . . Certainly, such influence as may be gained by addressing moral truths to the intellect is made greater if the accompaniments arouse an appropriate emotional excitement, as a religious service does; while, conversely, there can be no more effectual way of divesting such moral truths of their impressiveness than associating them with the prosaic and vulgarizing sounds and sights and smells coming from crowded children."

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* 'Contemporary Review' for September 1873, p. 517.

A positive compromise.

It is here contended, then, that Mr. Mackintosh is both right and wrong: right, in advocating a common ethical teaching; wrong, in wishing to exclude theology. What many persons believe would be far better than a mere colourless hazy system of Bible-reading and vague insinuation of nebulous doctrines would be a clear, sharp, distinct, and positive inculcation of natural religion apart from any teaching of revealed religion. The inculcation, that is, of a belief in *a Personal and Holy God, moral responsibility, and rewards and punishments in an immortal state of future individual existence.*

Such teaching, and a manual framed to convey it, some think might give satisfaction to all but the small sect of Antitheists. All Christian bodies, all Unitarians and Deists even, might acquiesce in such teaching, since the foundation for all would here be laid, while the rights of none would be encroached on. The special superstructure of each might then well be added by the purely religious teaching which each would bring to bear upon the children under their influence.

Ethics would come to repose on a secure basis, for although moral precepts do not depend upon the *will* of God, yet apart from Him they can have no stable existence.

Need of a belief in future rewards and punishments.

But it is not only the teaching of children that has to be considered. In the face of the prosperity of vice and the success of evil designs, which so often dazzle the eyes of those under temptation, what rational motive can be presented to the will of even adults, to induce them to repress a wrong desire, which he who feels it thinks he may safely indulge, apart from the existence of a good God and a future life? All men are, of course, more or less influenced by kind-hearted and generous feelings, and a sensible pleasure in different degrees generally attends the performance of good actions, but by no means always so —sometimes they are most painful.

But the question is how to influence the will towards a good action painful to the performer, and for which he sees no prospect of present or future advantage to himself. Mr. Lewes admits* the impotence of his philosophy in this matter. He says: "If a man is insensible to the welfare of others, we can no more convince him he ought to feel for them than we can convince the blind man that he ought to see the glories of colour." Why should such a one try to acquire an inclination to good which he does not now possess? We are rational beings, and clearly see that that which gives us happiness is worthy of regard and pursuit. The Agnostic philosopher, the disciple of Spencer, Huxley, Lewes, Mill, or Bain, who should really simply deprive himself of a pleasure, would be acting irrationally. If he felt *pleasure* in the self-denying action, he would of course naturally, and rationally on his own principles, perform it, but certainly not if he felt no such pleasure; if he then did it, he would simply be a fool. Let us grant for argument's sake that moral perception is really but the inherited naturally selected tendency to benefit one's tribe. Can any rational man be expected, as soon as he awakes to a sense of the delusion he has been under, not to regulate his actions accordingly? His rational nature cannot but despise (avowedly or secretly) modes of action which have no intelligible basis. And this remark applies to the humanitarian religion, which would have us toil, not for any happiness to ourselves or those dear to us (another form of self-gratification), but for a remote posterity which is to flourish for an instant before the great final lapse into annihilation of all mankind. On this matter Mr. Mott well observes:†—

> "The hope of progress, to have any powerful influence upon us, must be the hope of something in which we ourselves, or those who are really dear to us, can share; not the hope that a higher race of beings will inhabit the earth long after we have done with it. If I heard that the Emperor of China was a much better and nobler being than myself, I do not feel that I should be much elated by the news.

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* 'Problems of Life and Mind,' vol. i. p. 457.

† 'Origin of Savage Life,' p. 43.

Even if I congratulated himself and his subjects, my personal feelings would be rather grim. In like manner, the knowledge that my own lot, and the lot of those I love, was a very miserable one compared with what my descendants would inherit a thousand years hence, could not give me a very cheerful view of life in general. Nor is there any selfishness in this, for selfishness does not consist in highly valuing our own happiness—this is surely what the angels do—but in being willing to sacrifice the happiness of others in order to secure our own.

"The hope of improving the condition of others in whom our affections are interested is indeed one of the highest motives for exertion; but to suppose that we can carry such affection forward to far distant generations is to misinterpret human nature. The feeling which is mistaken for such transcendental love is a sentimental product of the imagination, which seeks to render the hope of individual immortality unnecessary to our happiness, by persuading us to forget the individual and to think only of the race. The feeling is false to nature, and can never be a real power in the world."

Two ambiguities.

Before quitting finally the question of public education we may notice an ambiguity lurking in the term "sectarian education."

In the first place, what is "sectarianism"? There are people who seem to imagine that an opinion may be an "opinion in general." But, in fact, each opinion must have a *definite* existence, just as no man in general exists, but only definite individual men. Every man, as certainly as he has eyes of a definite colour, and a nose of a definite form, must have definite opinions on the subjects which occupy his thoughts, even though it be the sceptical one that certainly has not been, and cannot be attained. Thus with regard to philosophy and religion, to bring up men without attempting to give them definite teaching on such subjects, is the same thing as directly teaching them that philosophy and religion are unimportant matters, possessing no certainty whatever. This view is just as definite, just as sectarian as any other; and those who hold it will tend to sympathise with and aid each other, just as will the holders of any other philosophical or religious opinion.

A similar ambiguity to that which clings to the word "sectarianism" attends the popular use of the term "education" itself. Education means the cultivation of the whole man, body and soul, and the latter in its entirety; emotion and will, as well as sense and intellect. No one can deny that religious dogmas have often a powerful effect for good or ill in stimulating the emotions and the will. No one, therefore, can deny that education without religious dogmas is necessarily defective and imperfect, though each may have his view as to what those dogmas should be.

Education should stimulate the highest powers.

As regards the intellect itself, no education can be regarded as satisfactory which does not tend to stimulate its highest powers. But education mainly carried on by physical science, tends to an undue preponderance of the senses, that is to say, of the lowest faculties of the soul. The highest intellectual activity—philosophical science—cannot, of course, be *directly* taught in poor schools. Nevertheless, it is difficult to see why the highest *results* of philosophical science should not be imparted as well as the results of other sciences, e.g., astronomy. No one would deprecate the imparting to poor children rational conceptions of the starry heavens, on the ground that they cannot be taught to examine and calculate for themselves, so as to have an independent knowledge of astronomical laws and phenomena. Now religion brings down to the popular apprehension, and embodies the highest results of philosophy. Those, therefore, who would exclude it from our schools would deprive the masses of such share as is open to them of the highest truth.

A parallel folly would be to insist on each man working out for himself his own astronomy. As religion, however, has infinitely more to do with practical life than has astronomy, it is plain that to exclude it is an infinitely more momentous matter.

Thus the movement in favour of education—in the abstract most admirable—tends in the concrete to be perverted, with calamitous effect, through misapprehension of the true meaning of the word; and in this way aspirations worthy of all praise, and a zeal which cannot be too much commended, run the risk of producing effects the very opposite to those really aimed at by the great body of those so interested in the cause we are discussing.

All who have at heart the welfare of their country must desire the wide diffusion of a spirit of self-control and rational subordination, and the depression of the more selfish and brutal instincts of our nature.

Motives which move men to act.

Men are moved to action by a variety of motives, such as, 1, their admiration of what is virtuous; 2, their admiration for what is beautiful; 3, their admiration for what is true; 4, their sympathy for some or all of their fellow-men; 5, the desire of their own greatest good; 6, the hope of reward; 7, the fear of punishment; and 8, the gratification of their instincts and passions.

This being so, let us see what is likely to be the effect of a wide-spread belief that an absolutely perfect, omnipresent, omnipotent, all-holy God will distribute to every one in a future life rewards and punishments exactly proportionate to every deed, word, and thought, for which in this life their will is responsible, that will having the power of self-determination:—

1. The admiration of virtue, goodness, and truth, is intensified and rationalised as of the essence of the ALL-PERFECT—a reasonable object for our utmost love.

2. Sympathy for our fellows acquires a basis which else it lacks, and this belief can never be the reason of that sympathy resulting in an unjust action, as, under the governance of an all-holy God, we cannot really benefit a friend by any evil, though kindly-intentioned act.

3. The natural desire for our own greatest good is thus seen to coincide absolutely with the law of "right."

4. The hope of reward and fear of punishment are intensified and again directed to a coincidence with the same law of "right."

5. The gratification of our instincts and passions, in contravention of the law of right, is impeded by the influence of motives, which are at once the highest and the most powerful.

On the other hand, if we are so unhappy as to disbelieve in God and a future life, we then have but a subjective support for our intuitions of truth, goodness, and beauty, and no certainty that we cannot benefit those we love by evil actions, if such appear desirable to us; moreover, we then have no motive for loving our neighbour, or forgiving our enemy, beyond what our spontaneous disposition prompts us to love or to forgive. In the same way, such disbelief deprives us of any certainty that "the right" is "necessarily our greatest happiness,". rewards and punishments become confined to this world, and merely such as we may hope to obtain without real merit, or to evade. In the same way, again, we cease to have any motive to restrain our instincts and passions beyond the degree to which selfish considerations prompt us to restrain them.

Place two men, in all things equal, save that one accepts, and the other rejects the belief referred to. Let them be exposed to temptations. It is as certain as any mathematical truth that such beliefs will operate in promoting virtue, and in repressing vice in the one who accepts them.

What then must be the effect of education in which these supreme truths are ignored? What must be the effect of an "amelioration" of the condition of the masses which should, at first, give them increased physical comfort indeed, but which should tend to make such considerations as temporal welfare the all-important or primary one?

As to the consequences of the wide acceptance of his, Mr. Herbert Spencer's, views, that writer himself admits:—

> "Few, *if any*, are as yet fitted wholly to dispense with such [religious] conceptions as are current. The highest abstractions take so great a mental power to realise with any vividness, and are so inoperative upon conduct unless they are vividly realised, that their regulative effects must for a long period to come be appreciable on but a small minority. . . . . Those who relinquish the faith in which they have been brought up, for this most abstract faith in which science and religion unite, may not uncommonly fail to act up to their convictions. Left to their organic morality, enforced only by general reasonings imperfectly wrought out and difficult to keep before the mind, their defects of nature will often come out more strongly than they would have done under their previous creed."—*First Principles*, p. 117.

These *à priori* teachings as to the necessary tendencies of religious convictions are supported by many *à posteriori* considerations. It is a widely spread notion that ignorance and crime go hand in hand; but the most notorious and conspicuous criminals of late years have been far from uneducated men. Rush, Palmer, Pritchard, Watson, Traupmann, Wainwright, occur to the mind at once; and it is unquestionable that the educated classes in this country and France furnish a fair percentage of the criminal population. If we take cases in which crime is connected with political passions, France, from 1789 to the present day, proclaims loudly how little guarantee intellectual culture offers against the most lamentable and criminal aberrations.

A rational self-control, due subordination, and a proper repression of selfish passions often enough fail to be exercised, even with the aid of religious training; but it is inevitable that such training should *tend* to such repression; while that the absence of religion *tends* to occasion effects of an opposite character, is not only plain to the reason *à priori*, but is made manifest by conspicuous examples.

These truths have lately strongly impressed themselves on the minds of some of our impulsive neighbours on the other side of the Channel. We might have expected a more important reformatory action in France than there yet appears to be any evidence of; but the mischief has been too deeply ingrained by the calamity of a century of corrupting influences. It is consoling, however, that here and there we find evidences of a clear perception of the fundamental and most important truth which we are now endeavouring to inculcate.

M. Le Play.

M. Le Play, in a recent pamphlet, recalls his fellow-countrymen to the practice of obeying the ten commandments as the only safe and sure road to national prosperity, and he laments how—

> "la nation se persuade, depuis longtemps, qu'elle s'est assurée l'admiration et le succès par les révolutions qui n'ont fait qu'aggraver les maux de la monarchie absolue, qui n'ont produit au dedans que la décadence, et qui n'ont suscité au dehors que le mépris."

M. Le Play* is a highly original worker and author far too little known or appreciated in this country, where the eminently practical and positive character of his researches should be especially appreciated. His publications on social matters do not repose on a mere collection of the observations of others. He has spent years in not only visiting different countries, from England and Portugal to Tartary and Arabia, but he has actually resided in the houses and families of working men of different kinds in all these different countries, observing with his own eyes the practical results of the different political, racial, geographical, and climatic conditions of the subjects of his prolonged and exhaustive inquiries.

Responsibility of public teachers.

But yet another consequence remains to be noticed in connection with conduct. If the lessons hereinbefore deduced from nature are correctly deduced, and if the consequences of the acceptance or rejection of such teaching be such as here represented, a specially awful responsibility must surely rest upon men of any social influence—a responsibility both as regards their fellow-men and themselves. But a very small degree of human kindness and sympathy must be requisite to bring home to such men the need and duty of attaining a distinct certainty both of the non-existence of God and the mortality of the soul before they venture to advise their fellow-men to discard from their thoughts and actions all reference to either.

As regards themselves, if God exists—if, that is, there is a Being of Absolute Beauty and Holiness—it follows as a strictly logical consequence that there cannot be any evil for a moment comparable with that of a voluntary denial of worship or of any other conscious rebellion against Him. It also becomes manifest that if there be a personal embodiment of evil the one motto of such a being must be the proud one, "*Non serviam.*" It necessarily follows that those who consciously or unconsciously, avowedly or practically adopt his motto must, however good-natured or fascinating in manner, or however materially moral, be absolutely and in fact the very worst men the world contains as long as they continue to act according to that motto. Moreover, not only the supreme vice but the unspeakable folly of such a line of conduct must become plain, and the truth of the dictum "*initium sapientiæ timor Domini*," be one of the most certain of all truths.

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* Author of 'Les Ouvriers européens,' and other works, and founder of the *Union de la Paix sociale.*

Let us then contrast the characters presented by the Agnostic philosophy with those presented by that system which (as here contended) is the direct teaching of nature.

Of the Agnostic philosophy it may be affirmed:—

Characters of the Agnostic Philosophy.

1. It fails to account for or harmonize with the dicta of consciousness as to the substantiality and persistence of the Ego.

2. It fails correctly to interpret the ultimate and fundamental declarations of consciousness as to necessary truth.

3. It denies the validity of that power of intensifying a motive by a voluntary act of selective attention of which power our own minds are conscious.

4. It does not accept as valid the principle of contradiction, deprived of which our intellectual state becomes necessarily chaotic.

5. It negatives the declarations of idealist philosophers upon grounds which would justify the popular beliefs as to objectivity, and yet it denies to such beliefs all truth and reality.

6. It makes no essential distinction between the self-conscious intellect of man, manifested by a language expressing general conceptions, and the association of sensible perceptions, as cognized by the sentient faculties of brutes, capable of expressing themselves by emotional signs only.

7. It takes no cognizance of our perceptions of truth, goodness, and beauty, as such, nor of our apprehension of the relatedness of relations.

8. It is absolutely fatal to every germ of morality.

9. It absolutely negatives every form of religion.

10. It absolutely stultifies itself by proclaiming its own

untruth, as included in its assertion that all our knowledge is but phenomenal and relative.

The theory of Evolution has now become of the very essence of this philosophy. Seeing, then, the wide-spread acceptance of the evolutionary theory, it may well be asked, is there any necessary connection between that theory and such philosophy? Do such philosophical consequences necessarily follow from that theory, however understood, or are they confined to the Spencerian and Darwinian forms of it?

It is, indeed, certain that any view of Evolution which should deny every distinction of *kind* between the mind of man and the psychical faculties of brutes would necessarily involve all the consequences here deprecated. But no such bar exists to the acceptance of evolution as applied to the "unfolding" from potential into real existence of constantly new forms of animals and plants. Even the actualisation (upon the occurrence of the requisite conditions) of latent life and sentiency in inorganic matter—so far as such life and sentiency be conceived as depending upon and consequently united with material substance—may be affirmed without involving the results objected to.

Such a theory of Evolution perfectly harmonizes with the presence in man of that substantial and persistent soul which, as we have seen, the voice of consciousness agrees with those of reason and volition in demanding.

In contrast with the Agnostic philosophy, that which it is here contended may be gathered from Nature presents the following characters. Of such philosophy it may be affirmed:

1. It accounts for and harmonizes with the dicta of consciousness as to the Ego.

2. It readily accepts the declarations of reason as to ultimate and necessary truths.

3. It asserts that power of election which our reason and perception of responsibility make known to us.

4. It, of course, fully accepts the principle of contradiction, and thereby induces order into our intellectual cognitions.

5. It accords with the teaching of common sense without being bound down within its limits.

6. It establishes the distinction between reason and instinct, and between language and emotional expressions.

7. It takes cognizance of our highest perceptions, including those of truth, goodness, and beauty as such.

8. It supports and enforces moral teaching.

9. It harmonizes with the declarations of religion, both natural and revealed.

10. It asserts its own truth in affirming the validity of our primary intuitions.

What, then, can be the motive for rejecting a philosophy which accords with the facts of experience, co-ordinates and explains them, and for accepting one so laboured yet so inadequate as the one here criticised? It is much to be feared that with many the objection lies in the last point but one enumerated by us in its favour. If so, the sting must lie in the fact of its harmony with religion. A passionate hatred of religion, however discreetly or astutely veiled, lies at the bottom of much of the popular metaphysical teaching now in vogue.

Dislike of religion sometimes induces the acceptance of it.

A belief in the necessary inconsistency of science with religion is therefore persistently propagated amongst the public by writings and lectures in which more is implied than asserted. In such lectures attempts have again and again been made to strike theology through physical science, to blacken religion with coal-dust, or to pelt it with fragments of chalk, or to smother it with sub-atlantic mud, or to drown it in a sea of protoplasm.

Delenda est Carthago! No system is to be tolerated which will lead men to accept a personal God, moral responsibility, and a future state of rewards and punishments. Let these unwelcome truths be once eliminated, and no system is deemed undeserving of a candid, if not a sympathetic, consideration, and, *cæteris paribus*, that system which excludes them the most efficaciously becomes the most acceptable.

The appeal here made, however, is not to religion but to reason, not to authority but to intelligence, not to any dogmatic system but to the pure, unadulterated, and unprejudiced human reason if haply anywhere it may be obtained for our use. By that we must be prepared to stand or fall.

Conclusion.

The consequences then which have been here put forward, merit, if they have been rightly represented, the attention of every man who becomes acquainted with them. Though such considerations, if taken alone, may be insufficient to determine the judgment, they may suffice to accentuate propositions the truth of which has been established from other sources. Though inconclusive alone, their corroborative efficacy may well be considerable.

CHAPTER XIV.

A POSTSCRIPT.

"This postscript is called for by an unamended republication by Professor Huxley of his criticism on the 'Genesis of Species,' of which he in part misapprehends, in part misrepresents the arguments. A Theist should anticipate a revelation. The Christian revelation asserts creation, but at the same time lays down principles which so harmonize with Evolution that no contradiction can arise in this respect between its doctrines and physical science. This harmony must be preordained."

This postscript specially called for.

WITH the preceding chapter the argument followed in this book comes to its natural close, but a circumstance, to be presently adverted to, seems to render it desirable to extend our survey one step further.

Reason expects revelation.

We have gathered from Nature in the foregoing chapters the supreme lesson of the existence of a personal First Cause of infinite power and wisdom and absolute goodness. Beyond this, however, reason is unable to proceed unaided, though it shows us clearly that a revelation as to the nature of God, and concerning our relations with and duties towards Him, is what is to be *à priori* expected from a being of absolute goodness and power. This expectant attitude is that which philosophy ought rationally to assume.

Modern philosophy has diverged from this attitude.

The course, however, which modern philosophy has taken, though for a time seeming to tend towards the anticipation of revelation (one justifying an expectant attitude towards it), has diverged remarkably in the opposite direction.

The secular dispute between those who assert and those who deny that all our ideas are modified sensations and no more has undergone a strange transformation within the last quarter of a century and with this transformation we witness a strange reaction.

The ambiguity of Locke caused his system to be developed by Hume, through Berkeley, into scepticism, and by Condillac into unmitigated materialism. These results were the occasion of that Kantian resurrection hailed throughout the Continent as a philosophical system finally and triumphantly refuting the school of empiricism. They were also the occasion of the parallel movement in Great Britain of Reid and his followers—a movement less developed and less conspicuous than was the reaction under Kant on the European mainland.

The event has shown, however, that sensationalism was scotched, not killed. In spite of Royer-Collard, Maine-de-Biran, Jouffroy, and Cousin, the grossest sensationalism has reappeared in France through Auguste Comte.

In Britain the successors of Reid—Sir William Hamilton, Mansel, and McCosh—have all been unsuccessful in exorcising the sensational spirit; and though Mr. John Stuart Mill (as almost a pure Lockian) may be regarded as an instance of philosophical "survival," yet Hume lives again in Huxley and in Lewes; and indeed (however they may differ as to subordinate questions) Messrs. Spencer, Bain, Mill, Comte, Huxley, and Lewes, unite in an essential and fundamental agreement with the great sceptic of Scotland.

Thus, though fifty years ago the world of thought pronounced Hume for ever defeated by Kant, we find Hume once more in possession of the field; and even the extreme sensationalism of Condillac is justified, nay demonstrated to be inevitable truth, by Mr. Herbert Spencer. Indeed that author may, in a certain sense, be deemed the legitimate descendant and representative of Locke, as understood by those who refuse to attribute to the term "reflexion," as used by him, a meaning which would stultify him as to his whole philosophical position.

An inquiry into the causes of this untoward resurrection would be full of interest, but cannot, as too remote from the matter in hand, be here pursued. The mere existence, however, of such a revival would seem to demonstrate that the Professor of Kōnigsburg did not dig deeply enough in his attempted process of eradication.

Mr. Spencer and Evolution.

But Mr. Spencer, whose philosophy may be taken as the most complete expression of modern views, is far from being a mere reviver of Hume, of Locke, or of any other philosopher. Indeed, he differs from Locke in admitting, in a certain sense, "innate ideas," while he combats Hume with vigour and efficiency, and may not improbably quite repudiate the imputation of being a disciple of the philosopher last named.

It is as the philosophical embodiment of modern physical science that Mr. Spencer is pre-eminently distinguished. Science has indeed made vast acquisitions since the time of Hume, and the stored-up accumulation of its facts contains materials calculated to affect powerfully the imagination of mankind. Now Mr. Spencer's philosophy is replete with conceptions and inferences derived from that accumulated treasure.

It is by such scientific progress, by the indirect influences of physical science on philosophy, that this development of reactionary sensationalism must be explained. New issues have been joined, and the point of view having been shifted, controversies deemed closed have to be reconsidered. This reconsideration has become requisite, not through want of conclusiveness in the earlier replies to the argument as then conducted, but through the fresh lights now let in at apertures in dividing walls which then seemed of unbreachable solidity, and which give to old facts a quite new aspect.

The dispute as to our possession of ideas and conceptions which no experience of any single life, however prolonged, can explain—the existence that is of an *à priori* element in our knowledge—may be considered to have ended in the nineteenth century with the triumphant refutation of those sensationalists who denied the existence of such an element.

This refutation Mr. Spencer not only fully accepts as valid, but he actively co-operates in demonstrating the absurdity of the belief that the mental phenomena of any one life, however prolonged, are sufficient to account for such conceptions as extension, causation, objectivity, and existence.

The opponents of sensism, however, must be prepared to take small comfort from such acceptance and seeming aid, for Mr. Spencer is really one of their most formidable enemies; and he claims to have demonstrated by a combined system of *à priori* and *à posteriori* proof that sensation and all intellectual action are fundamentally one and the same, and that (sense being primary) every idea is made up of transformed sensations. This demonstration is accomplished by means of the doctrine of evolution, which has of late attained so wide a currency and such general acceptance. According to this doctrine all the varied organisms inhabiting this planet have been gradually produced one from another by merely natural processes, and, as Mr. Darwin would fain have us believe, mainly by the action of "Natural Selection." In this way Mr. Spencer conceives that what is *à priori* to the individual is but *à posteriori* to the race, and he thus claims to have reconciled the two schools of thought, namely, those who assert and those who deny the derivation of all our ideas exclusively from sensation and experience. As is manifest, however, he gives the substantial victory entirely to the sensists, and denies to all ideas any higher origin than mere incipient sentiency. It is plain then that the old battle has to be fought again on new ground, and no argument can be henceforth admitted as valid until it has stood the test of examination in the light of the theory of evolution.

The effect which this theory has had on philosophy is small compared with that which may be yet to come. Its most modern advocates, such as Dr. Bastian, are not content with driving back "experience" to the lowest forms of animal or even of vegetable life, but teach that one physical process of change—redistribution of matter and motion—results successively in chemical integration and aggregation, the formation of organisms, life, feeling, thought, memory, love, and will. Even Professor Tyndall, in spite of his opposition to Dr. Bastian, is fundamentally at one with him, and, as we have seen, speaks of the genius of Plato, Shakespeare, Newton, and Raffaele, as latent and potentially existing in the fires of the Sun, and being the ultimate outcome of an unconscious primeval mist.

Evolution welcomed by anti-Christians.

It is not surprising then that all those who, for whatever reason, are really hostile to the Christian revelation took especial comfort from this result and outcome (which appeared to them to be the necessary outcome) of the theory of Evolution.

This is abundantly manifest in the writings of Strauss, Vogt, Haeckel, and Büchner, and even in our own country signs of a similar spirit in leading evolutionists have been shown in no equivocal manner. We have indeed been accustomed to hear again and again the assertion that men of science differ from the devotees of theology, in that they enter on their inquiries *æquo animo*, free from prejudice,* and desirous only of truth. Believers have been warned, *usque ad nauseam*, that a wish to believe vitiates all their arguments. But what weight can we attach to conclusions such as those, e.g., of Professor Huxley, who tells us with regard to the doctrine of Evolution that "the position of complete and irreconcilable antagonism which, in his opinion, it occupies to the Church, is '*one of its greatest merits in my eyes?*'" A similar, though less striking, theological prejudice is also exhibited by Mr. Darwin himself. He tells us himself, in his 'Descent of Man,' that in his 'Origin of Species' his *first object* was "to show that species had not been separately created;" and he consoles himself for admitted error by the reflection that "I have at least, as *I hope*, done good service in aiding to overthrow the dogma of separate creations."†

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* Professor Tyndall in his 'Fragments of Science,' p. 167, observes: "They have but one desire—to know the truth. They have but one fear—to believe a lie."

† I am indebted to Mr. Chauncey Wright for calling my attention to this remark, which had escaped my notice.

Now, inasmuch as revelation supposes the validity of and addresses itself to human reason, it would of course be disproved did it contradict absolutely anything which human reason absolutely affirmed—such dicta acting as our only tests.

Rational attitude of a Theist towards religious systems.

Let us then suppose a man who, by the exercise of his reason, has arrived at that theistic belief and willing anticipation of a revelation which is here maintained to be rational.

Looking abroad upon the world as he finds it to-day, he can hardly hesitate as to the revelation into the claims of which he is morally bound to inquire with reverent candour. This revelation is that which the Christian Church alone affirms itself to possess infallibly and to put before unbelievers for their acceptance. If such a man finds that the doctrines of the Church contradict what his reason positively affirms, he must, of course, reject it; but he is bound to accept it if he finds its teaching harmonize with his reason and with his conscience. As a fact, the Christian revelation asserts "Creation;" and Mr. Darwin and Professor Huxley were right in thinking that to disprove "Creation" was to disprove Christianity.

Christianity asserts Creation.

Our supposed inquirer is manifestly bound to carry on such inquiry not only with a candid spirit, but with a desire to find such asserted revelation to be true. He is so bound, since no one who has arrived at a philosophic contemplation of the Infinite Majesty and absolute holiness and beauty of the God whose existence is made known to us by Nature, can rationally do other than most earnestly desire a revealed knowledge of Him, if haply such may be found.

It is thus that a moral element may plainly enter into the acceptance or rejection of revelation. That it is congruous it should do so is evident from what we see as to the natural religion we gather from Nature. There, again, it has evidently not been the intention of the First Cause to make the evidence of his existence so plain that its non-recognition would be the mark of intellectual incapacity.

Conviction as to Theism is, as we see, not forced upon men, willing and unwilling, as is the conviction of the existence of the sun at noonday. The natural revelation appeals to and puts to probation the *whole* of man's nature; it might therefore be expected *à priori* that a revelation from the Author of Nature would have a similar probationary action.

That inclination warps judgment is a trite remark. As Mr. Lewes says:* "The psychological law that we only see what interests us, and only assimilate what is adapted to our condition, causes the mind to select its evidence." Again, speaking of a man who has been subjected to a special kind of prejudice, he observes:† "In truth his mind has received a deep impression; a conception has been fixed there, and his feelings keep it supplied with energy sufficient to bear down any opposing conception." The same writer, again, says‡ that he himself only hopes for converts to his own system from those "who, by previous culture and native disposition, have been prepared for *a sympathetic attitude;* these are the conditions which determine the acceptance of new truths. . . . . Unless the attitude of mind be sympathetic, there will be stubborn resistance to what otherwise would be clearest evidence."

Professor Tyndall observes:§ "The desire to establish or avoid a certain result can so warp the mind as to destroy its power of estimating facts. I have known men to work for years under a fascination of this kind."

Again, Mr. Lecky remarks:‖ "Every moral disposition brings with it an intellectual bias, which exercises a great and often a controlling and decisive influence even upon the most candid inquirer."

The doctrine of Creation then being a part of the Christian revelation, and this doctrine being made in the present day a special object of attack, an inquiry into its exact meaning came to have a special interest.

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* 'Problems of Life and Mind,' vol. i. p. 467.
† *Op. cit.* p. 461.
‡ *Op. cit.* vol. ii. p. 505.
§ 'Fragments of Science,' p. 47.
‖ 'Morals,' vol. ii. p. 204.

Accordingly, in my book on the 'Genesis of Species' I had in view two main objects. My first was to show that the Darwinian theory is untenable, and that "Natural Selection" is not *the* origin of species. My second was to demonstrate that nothing even in Mr. Darwin's theory (as put forth before the publication of his 'Descent of Man'), and, *à fortiori*, nothing in Evolution generally, was necessarily antagonistic to Christianity.

The Genesis of Species.

I did so by distinguishing between primary and derivative creation, and by showing that the distinction, far from being a novel subtlety of my own devising, had been discussed, and the principles on which it reposed accepted, by distinguished theologians centuries before Evolution was heard of.

It was, no doubt, a great surprise and disappointment to Professor Huxley to find it clearly demonstrated that his favourite doctrine of Evolution, far from being in "unmistakable antagonism" with Christianity, actually harmonized with it, thus altogether losing what he tells us he deemed to be "one of its greatest merits."

And Professor Huxley.

Accordingly he combated my arguments in a paper which appeared in the 'Contemporary Review' for November 1871. This attack he has since republished, and I will therefore restate here my reply to it, first noticing the reasonings offered by my opponent, and afterwards saying some words as to his mode of conducting the controversy.

As I have said, my second object in my 'Genesis of Species' was to demonstrate that there is no necessary antagonism between the Christian revelation and evolution.

In meeting me on this ground (to discuss what seems naturally to have interested the Professor more than anything else in my book), he endeavours to create a prejudice against my arguments, and to narrow my base, by representing me as a mere advocate for specially Catholic doctrine.*

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* At p. 454, Professor Huxley gives the words "Catholic theology" with marks of quotation as if mine, though in fact they were not so. This typographical error does not misrepresent my substantial meaning, but it none the less tends to create a prejudice against my statements in the mind of the public.

I altogether decline to allow the issue to be thus limited. I decline it because neither did I intend such limitation, nor do any words of mine justify such a construction of my purpose. I took up, and I take up, only the ground common to me and to all who hold the Christian religion as expressed in the Apostles' Creed, or who maintain the inspiration of Scripture. The better to make sure of my position I made use of an extreme case, knowing that if I could maintain *even that*, then all within that extreme term could not certainly be questioned. Purposely then I set out to show, and I did show, that the strictest Ultramontane Catholics are perfectly free to hold the doctrine of evolution, thereby making evident that with regard to Christians in general there could not be a doubt as to *their* freedom in the matter. For this end I expressly selected just such persons as would commonly be supposed not to be those from whom (in Professor Huxley's words) "modern science was likely to receive a warm welcome," and amongst others the Spanish Jesuit, Father Suarez, precisely because, as Professor Huxley says, "the popular repute of that learned theologian and subtle casuist was not such as to make his works a likely place of refuge for liberality of thought."

A misapprehension.

My critic shows how he misapprehends my aim and intention when he speaks of "Mr. Mivart citing Father Suarez as his chief witness in favour of the scientific freedom enjoyed by Catholics." Had he been such a witness I should not for one moment have thought of citing him; it was precisely as one of the most rigid theologians, and of "unspotted orthodoxy" (as Professor Huxley justly remarks), that I called him into court, where he testifies so completely to my satisfaction.

His astonishment.

The success of my mode of procedure is, I confess, gratifying to me. Not only was my argument "most interesting" to Professor Huxley, but he tells us his "astonishment reached its climax," and that he shall "look anxiously" for additional references "in the third edition of the 'Genesis of Species.'" Fortunately I have no need to keep the Professor waiting, but shall shortly proceed to give him these additional references at once.

Let it be borne in mind that in view of the popular conceptions current in England on the subject, my argument was that if even those who receive the teaching of St. Thomas Aquinas and the Jesuits, and who look to Rome for doctrinal decisions—if *even those* are free to accept evolution, then, *à fortiori*, other Christians, supposed to be comparatively untrammelled, need not hesitate as to the harmony and compatibility of Christianity and evolution.

Of all I said in my book on the subject I have nothing to retract; but I repeat yet more confidently than before that "evolution is without doubt consistent with the strictest Christian theology;" that "it is notorious that many distinguished Christian thinkers have accepted, and do accept, both ideas;" that "Christian thinkers are perfectly free to accept the general evolution theory;" and, finally, that "it is evident that ancient and most venerable theological authorities distinctly assert *derivative* creation, and thus their teachings harmonize with all that modern science can possibly require."

The point I had to prove was, that the assertion of the evolution of new species (whether by Mr. Darwin's "natural selection" or according to my hypothesis) was in no opposition to the Christian faith as to the creation of the organic world.

In order to prove this I had to consider the meaning of the word "creation," and I found that it might be taken in three senses, with only two of which, however, we had to do.

The first of these was direct creation out of nothing, of both matter and form conjoined—absolute creation such as must have taken place when the earliest definite kind of matter appeared.

The second was derivative or potential creation: the creation by God of forms not *as existing*, but *in potentia*, to be subsequently evolved into actual existence by the due concurrence and agency of the various powers of nature.

Searching for information on the subject, I found to my surprise that the regular teaching of theology adopted this view, which was maintained by a complete consensus of authorities. Of these I purposely chose but a few telling ones as types; and, amongst the rest, Suarez, who, without any doubt, and as I shall proceed to demonstrate more at length, is a thorough-going supporter of it.

Another misapprehension.

Professor Huxley has quite misapprehended[*] my meaning, hence the disappointment he speaks of. What he did not find, I never said was to be found. What he actually did find is what everybody knew before, but is a matter totally different from and utterly irrelevant to the point I maintained.

My critic fails to distinguish between the question as to the ***nature*** of creation as an act, and that concerning the *fact* of creation.

Now, what my intention was is plainly shown by the words I used. I said: "Considering how extremely recent are these biological speculations, it might hardly be expected *à priori* that writers of earlier ages should have given expression to doctrines *harmonizing in any degree* with such very modern views; nevertheless, this is certainly the case." And so it is.

Of Suarez I said, he opposes those who maintain the absolute creation of substantial forms, and he distinctly asserts derivative (potential) creation. And this is true.

Although Professor Huxley has conveyed the impression that I adduced Suarez as a witness to evolution, I cannot think he intended so to do. He surely could not have imagined me so absurd as to maintain that ancient writers held that modern view; to attribute to them the holding of such a conception would be to represent them as nothing less than inspired. For certainly no notion of the kind could have been present, even in a dream, to the minds of such thinkers. In their eyes (as in the eyes of most till within the last century) scientific facts must have seemed to tell in the opposite direction.

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[*] Not only this, but he has even misrepresented my words. He says (p. 445): "According to Mr. Mivart, the greatest and most orthodox authorities upon matters of Catholic doctrine agree in distinctly asserting 'derivative creation' or 'evolution'"—as if "derivative creation" and "evolution" were *the same thing*. Having thus made me enunciate what I never thought of, consequences are deduced which, of course, are not of my deducing. Derivative or potential creation such authorities do assert: evolution of species, however, was no more thought of in their days than the electric telegraph.

An explanation.

All I maintained, and all that I thought any one could have supposed me to maintain, was that these writers asserted abstract *principles* such as can perfectly *harmonize* with the requirements of modern science, and have, as it were, provided for the reception of its most advanced speculations.

My words were: "The possibility of such phenomena, though *by no means actually foreseen,* has yet been *fully provided for* in the old philosophy centuries before Darwin." And that this is the case can be proved to demonstration. The *really* important matter, however, is not what were my expressions, but *what is the fact* as to the compatibility of evolution with the strictest orthodoxy? We shall see how, by Professor Huxley's very fortunate misapprehension of my meaning, this truth will be brought out more clearly than before.

Far from maintaining that Suarez was a teacher of development or evolution, what I quoted him for was this:—

I. As an opponent of the theory of a perpetual, direct creation of organisms (which many held, and still hold).

II. To show that the principles of scholastic theology are such as *not to exclude* the theory of development, but, on the contrary, to favour it, even before it was known or broached.

What Professor Huxley quotes in his article amply *confirms my position.* For if there are innumerable substantial forms in the potentia of matter, which are evolved according to the proximate capacity of matter to receive such forms, it is evident that if the organization of matter, through chemical or other causes, progresses by the ever-increasingly complex reactions between bodies and their environment, then it necessarily follows that new and higher substantial forms may be evolved, and consequently new and higher forms of life.

Such a principle, firmly established against opponents, becomes applicable to the evolution of new species, as soon as ever physical science shows good reason to regard the origin of species not as simultaneous but successive.

Suarez.

It may be objected that Suarez, in the passage referred to, only adverts to new individuals of known kinds in the ordinary course of nature. Professor Huxley says: "How the substantial forms of animals and plants primarily originated, is a question to which, so far as I am able to discover, he does not so much as allude in his 'Metaphysical Disputations.'" Most certainly, in his day, no one entertained the modern notion as to the origin of species; and it was hardly to be expected that Suarez should say anything directly in point. That he should establish the needful principle was all we could reasonably demand or expect.

Nevertheless, in a remarkable manner, even Father Suarez does refer to the origination of certain kinds of animals, and admits their actual evolution by natural causes. These are partly exceptional forms such as hybrids, and partly such as were believed to originate by cosmical influences direct from the inorganic world, or through the agency of putrefaction.

In lib. ii. de Opere Sex Dierum, c. x. n. 12, speaking of such animals as the mule, leopard, lynx, &c., after stating the opinion that individuals of their kinds must have been created from the beginning, he says, "nihilominus contrarium censeo esse probabilius;" and he gives his reason, "quia hujusmodi species animalium sufficienter continebantur potentialiter in illis individuis diversarum specierum ex quorum conmixtione generantur; et ideo non fuit necessarium aliqua eorum individua ab auctore naturæ immediate produci." This in principle is absolutely all that can be required, for it reduces the matter simply to a question *of fact.* He asserts *the principle* that those kinds of animals which are potentially contained in nature need not be supposed to be directly and immediately created. In determining what kinds were or were not so contained, he followed the scientific notions of his time as he understood them. He would have written according to the exigencies of science now.

But this matter is really unmistakable. For so far was Suarez from teaching that all life requires direct creative action, that he speaks of certain creatures, "quæ per influentiam cœlorum ex putrida materia terræ aut aqua generari solent." (Ibid. n. 10.)

It is also interesting to see that (in n. 11) he positively asserts the improbability and incredibility that certain kinds of animals now living were actually created at first at all: "Alias dicendum esset in omnibus speciebus quantumvis imperfectis aliqua individua in principio fuisse facta quia non est major ratio de quibusdam quam de aliis. *Consequens est incredibile.*" He then instances certain insects, but as far as the *principle* of evolution in itself is concerned he might as well have selected crocodiles.

Moreover, with respect to certain vegetable productions, he says (ib. c. vi. n. 1), "an vero hujusmodi herbæ sint factæ hoc die *tantum in potentia* vel etiam in actu magis dubitari potest." Finally, even with regard to the production of animals altogether, he tells us that it was not a *real creation* (c. x. n. 3), "sed ex præjacente materia modo tamen proprio auctoris naturæ." It is strange that Professor Huxley should have overlooked these passages which so directly contradict his assertions.

Nevertheless these passages are not, let it be recollected, adduced to show that Suarez held the doctrine of evolution, or that he maintained as a fact that species were evolved, except in peculiar cases, or that he took St. Augustin's view as to the fact of creation; but to demonstrate that he distinctly admits *principles compatible* with evolution, and that even where he asserts direct and immediate divine action, yet that even there the exceptions he admits bring out still more clearly how completely I was justified in adducing him as a witness to the compatibility of evolution with the principles of the scholastic philosophy.

So much then for the teaching of Suarez as to the nature of the creative act and the admission of the evolution of even certain new organic forms by natural causes.

Let us turn now to a much more important subject.

The fact of creation.

Besides and in addition to this view it is a most remarkable circumstance that ideas should have been expressed of a distinctly evolutionary character by the highest theological authority, even as regards the *very fact of creation*, as an historical event.

Few things seem to me more striking than that such an anticipation, as it were, should have been enunciated by one of the greatest teachers the Church has ever known, a doctor the authority of whose writings is not surpassed by that of any of the Fathers—I mean St. Augustin. As I said in my book, "it must be borne in mind that no one had disputed the generally received belief as to the small age of the world, or of the kinds of animals and plants inhabiting it." Nevertheless, as I have shown, the teaching of St. Augustin was distinct with respect to the potential creation of animals and plants. That great source of Western theology held that the whole creation spoken of in Genesis took place in one instant; that all created things were created at once, "*potentialiter atque causaliter*," so that it accords with his teaching if we believe in the gradual development of species, the slow evolution, "per temporum moras," into actual existence of what God created potentially in the beginning.

Now the greatest representatives of Catholic theology are unquestionably St. Augustin and St. Thomas Aquinas, and this being, as almost every one knows, the case, it is inconceivable how a teacher like Professor Huxley could write as he has done regarding the consequences of a divergence of Suarez from their expressed opinions.

If, as Suarez suggests, St. Thomas followed St. Augustin rather through deference than from identity of opinion, it would only bring out more strongly the paramount authority of the latter. But in fact Suarez was here mistaken, for we have St. Thomas's own words as to the matter, where, speaking of St. Augustin's view, he tells us, "et hæc opinio *plus mihi placet*" (2 Sent. Dist. 12, quæst. 1, a. 2).

Another misapprehension.

Here it may be well to explain (as Professor Huxley seems quite to have misapprehended me), that when I spoke of the "wide reception" of Suarez, and of his being "widely venerated" and of "unquestioned orthodoxy," I never thought of placing him on a level with St. Thomas and St. Augustin. Moreover, "wide veneration" and "orthodoxy" by no means imply authority in the sense of binding consciences. Many Catholic teachers altogether reject the teaching of Suarez on certain points, though they none the less consider him an authority to be respectfully consulted, indeed, but by no means to be necessarily followed.

Multitudes of teachers, all agreeing in matters of faith, yet belong to very different theological schools, and the idea that any one of them can bind the others is simply laughable to those who know anything of the matter.

Professor Huxley seems to imagine in showing that Suarez (like most teachers of his day, Catholic or not, e.g. Tycho Brahe) adopts an extreme literalism of Scripture interpretation, he has made a notable discovery. But (as before remarked) I referred to Suarez for principles of interpretation with regard to derivative creation, and his views as to the historical facts of Genesis are quite beside the question. St. Thomas explains the diversity of opinion among theologians in a way which exactly meets my purpose: "Quoad mundi principium, aliquid est quod ad substantiam fidei pertinet scilicet mundum incepisse creatum et hoc omnes sancti concorditer dicunt. Quo autem modo et ordine factus sit non pertinet ad fidem nisi per accidens, in quantum in Scriptura traditur, cujus veritatem diversa expositione sancti salvantes diversa tradiderunt" (2 Sent. Dist. 12, q. 1, a. 2).

My critic also appears to think that because one side of a question is perfectly orthodox, that its contradictory cannot also be so. If he knew the A B C of Catholic doctrine, he would know that in *open questions* it is perfectly allowable to maintain either side.

Want of acquaintance with theology.

Professor Huxley says, that Suarez in this question (as in other matters) is in opposition to St. Augustin. He is so; but other theologians of equal weight severely took him to task for his expressions on this subject, as I shall proceed to show, and there is not the slightest difficulty in bringing forward many theological authorities, both before and since the time of Suarez, who approve or positively affirm the position which St. Augustin took. Therefore, even if I had made the mistake which Professor Huxley supposes I had, it would not be of the slightest moment, and my thesis could repose as securely on the support of other theologians.

Thus I may mention St. Thomas, St. Bonaventure, Albertus Magnus, Denis the Carthusian (1470), Cardinal Cajetan (1530), Melchior Canus (1560), Bannes (1580), Vincentius Contenson (1670), Macedo and Cardinal Noris (1673), Tonti (1714), Serry (1720), Berti (1740), and others down to the present day.

Authorities.

St. Bonaventure calls St. Augustin's exposition, "Multum rationabilis et valde subtilis," and speaks of his method as a "via philosophica;" nay, he calls the contrary opinion "minus rationabilis quam alia" (Librum secund. Sent. Dist. 12, quæst. 2, art. 1 conclusio).

St. Thomas, as I have shown, supports and approves St. Augustin, but he even admits ('Summ.' par. i. quæst. 73, art. 1, ad. 3) the possibility of new species himself. He says: "Species etiam novæ si quæ apparent, præextiterunt in quibusdam activis virtutibus sicut et animalia ex putrefactione generata producuntur ex virtutibus stellarum et elementorum quas a principio acceperunt, etiam si novæ species talium animalium producuntur."

Professor Huxley will hardly dispute the weight and significance, in this controversy, of the distinct adoption of St.

Augustin's view by an eminent Roman Cardinal of the latter part of the seventeenth century.

Yet Cardinal Noris ('Vindiciæ Augus.' c. iv. § ix.; see Migne's 'Patrologia Cursus Completus,' tom. xlvii. p. 719) speaks in the following uncompromising words:—

> "Hic etiam recentiorum querelæ, imo censuræ, quibus insignem Sancti Doctoris interpretationem in cap. i. Geneseos excipiunt, refellendæ sunt. . . . . Augustinus, quod videbat sex priores dies queis Moyses mundum a Deo creatum scribit, si litteraliter accipiantur, gravissimis difficultatibus subjici, quas ipsemet in libris de Genesi ad litteram proponit, subtilem prorsus ac *se dignam* sententiam excogitavit, nempe dies illos intelligendos esse mystice, juxta cognitionem angelicam de rebus in Deo, et in proprio genere, et juxta ordinem rerum simul a Deo creatarum, dierum etiam ordinem in angelorum mente designavit. . . . . Ex nostris scriptoribus Magister Emmanuel Cerda Lusitanus, publicus in Academia Conimbricensi theologiæ professor, in suis Quodlibetis theologicis, acerrime contra recentiorum impetum Magni Parentis sententiam propugnat, eorumque et in censurando audaciam, et in impugnando debilitatem ostendit; idem quoque præstitit Carolus Moreau, noster Bituricensis in vindiciis pacificis."

Speaking of Cornelius à Lapide, he adds:—

> "Verum Augustino consentit Albertus, qui ob multiplicem ac mirabilem litteraturam Magni cognomento insignitus fuit, his plane verbis; sine præjudicio sententiæ melioris videtur Augustino consentiendum. Pars I. Summæ q. 12, de quatuor coævis. Addit Sanctus Thomas proxime laudatus: Hæc opinio (Augustini) PLUS MIHI PLACET. Itane Corneli sententia illa, quam Albertus Magnus ac Sanctus Thomas, Scholasticorum lumina ac columnæ, probant et sequuntur, hac ætate erronea evasit? Quænam illam Synodi, qui Romani præsules, quæ doctorum academiæ proscripsere? An quia tibi tuisque displicet erronea censenda est? . . . . Næ Sanctus Thomas, Albertus Magnus, Sanctus Bonaventura, et Ægidius Romanus inter accuratiores theologos minime recensendi sunt? Erunt ne illi de ultima theologorum plebe, Senatores vero Suarez, Molina et Martinon? Imo omnium nobilissimi illi sunt quibus et Suarez et Molina assurgant, Martinon vero nec eadem cum illis die nominetur."

Berti, who was Assistant-General of his order, who published his book at Rome, and belongs to a period more than half a century later than Cardinal Noris, proposes the following thesis ('De Theologicis Disciplinis,' lib. xi. c. ii.):—

> "Propositio I. Audaciæ potius et fidentiæ vitio, quam doctrinæ laude debent notari, qui maledico dente carpunt Augustianam de *simultanea creatione* sententiam.
>
> "Propositio II. Augustini de simultanea creatione sententia non solum ab omni animadversione immunis est, *verum etiam probabilis et prope certa.*"

And in n. 9 he says:—

> "Quare in distributione operum Dei omnia quidem spectant ad illos dies invisibiles in quibus creavit omnia simul, videlicet ad diversas cognitiones angelorum; sed plura, hoc est, quæ primum in rationibus seminalibus, deinde visibiliter facta sunt, si accipiantur secundum priorem conditionem, pertinent ad dies intelligibiles, et unico momento fuerunt et ipsa producta; si vero inspiciantur, ut in propria forma aspectabili constitutæ, istorum creatio perficitur in tempore, et post sex illos dies invisibiles; spectatque ad dies naturales in quibus Deus operatur *quotidie*, quidquid ex illis tanquam involucris primordialibus in tempore evolvitur. Sed legite S. Patrem Lit. v. de Gen. ad lit."

But now, coming down to our own day, the same complete refutation of Professor Huxley's position is most easily effected.

Father Pianciani, a Jesuit, was president of the College of Philosophy in the Roman University. His work, 'Cosmogonia Naturale comparata al Genesi,' was published at Rome in 1862, at the press of the 'Civiltà Cattolica.' Professor Huxley will hardly dispute as to his orthodoxy. This author, in his 'Historia Creationis Mosaicæ' (published at Naples as long ago as 1851), p. 29, shows that the whole of the first chapter of Genesis must be read as a most sublime and magnificent poetical description. Concerning St. Augustin's special view, he tells us (p. 15), "Ejus doctrina ad hæc capita revocatur:"—

> "1° Omnia simul a Deo fuisse producta: 2° Cum ipsa ita disponi queant, ut infimum gradum materia elementaris, supremum puri spiritus occupent, interjectos et medios tum mixta, seu chimica composita, tum corpora physice composita, ut saxa, tum præcipue corpora organica. Hinc quæ ad infimum, supremumque gradum spectant et si quæ alia sunt, quæ naturæ viribus neque nunc producuntur, plene et

perfecte tunc fuisse producta; quæ vero interjectis gradibus continentur et nunc naturæ viribus producuntur, virtute duntaxat et seminaliter seu *causaliter,* tunc Dei imperio extitisse. Augustini opinio, *semper ab errore immunis habita* pluribus placuit theologis quos inter Alberto Magno. S. Thomas in Summa, p. 1, q. 74, a. 2—eam reveretur, et nec ipsi nec vulgari doctrinæ præjudicandum censet." —pp. 15, 16.

No liberal-minded man can see with anything but regret how—though no intelligent man can fail to understand why —Professor Huxley so eagerly endeavours to restrict within the narrowest limits the faith of the greater part of the Christian world, saying, "I, for one, shall feel bound to believe that the doctrines of Suarez are the only ones which are sanctioned by authority," &c.

But the attempt to represent that such literalism is binding on Catholics is simply preposterous. There is no need for the present Cardinal Archbishop of Westminster to give any such permission as Professor Huxley speaks of (as to the six days), because such freedom existed long before His Eminence occupied the see, and was accepted by his predecessor, Cardinal Wiseman. It would be restriction, not freedom, which could alone require him to make any declaration on the subject.

We might really suppose that at this day it would be superfluous to assert that Catholics are free and unembarrassed in their geology and palæontology. But that I may not seem to shirk a point on which the Professor lays such stress, namely, the "six days" of creation, I will say a few words as to the position of Catholics with regard to this matter.

Now, authorities showing the freedom of Catholics in this respect are so numerous, that it is only difficult to choose. In the first place we have St. Augustin and his many followers, also St. Hildegard, Bertier, Berchetti, Ghici, Robebacher, and Bossuet. Cardinal Cajetan says distinctly that the six days were not real days, but meant to indicate order. And I may cite also Cardinal Gousset, 'Théol. Dogmatique,' t. i. p. 103, *seq.*; Frayssinous, 'Défense du Christianisme,' conf. 'Moïse, Historien des Temps primitifs;' Perrone, S.J., 'Prælect. Theol.,' vol. i. p. 678 (edit. Migne, 1842). But it is really needless to speak of writers during the last few years, for books are daily printed at Rome *with the permission of authority* such as Perrone, just mentioned, also Tongiorgi and Pianciani ('Cosmogonia Naturale,' p. 24), before referred to. In English we have Cardinal Wiseman's 'Science and Revealed Religion,' Lectures v. and vi., and only last year a similar work was published in London by the Rev. Dr. Gerald Molloy.

An utter mistake.

So much for the question of the six days. But before leaving the subject of Christianity and evolution, there is yet one more point which it may be well to notice. With respect to the hypothesis I advanced that Adam's body might have been formed by evolution like those of other animals, the soul being subsequently infused, Professor Huxley remarks:—

> "If Suarez is any authority, it is not Catholic doctrine. 'Nulla est in homine forma educta de potentia materiæ' is a dictum which is absolutely inconsistent with the doctrine of the natural evolution of any vital manifestation of the human body. Moreover, if man existed as an animal before he was provided with a rational soul, he must, in accordance with the elementary requirements of the philosophy in which Mr. Mivart delights, have possessed a distinct sensitive and vegetative soul or souls. Hence, when the 'breath of life' was breathed into the man-like animal's nostrils, he must have already been a living and feeling creature. But Suarez particularly discusses this point, and not only rejects Mr. Mivart's view, but 'adopts language of very theological strength regarding it.'"

Professor Huxley then quotes from Suarez a passage ending "ille enim spiritus, quem Deus spiravit, anima rationalis fuit, et PER EAMDEM FACTUS EST HOMO VIVENS, ET CONSEQUENTER, ETIAM SENTIENS," and a conciliar decree condemning the assertion of the existence of two souls in man.

It is surely not less prudent than it is just to refrain from speaking authoritatively of that which we have not studied and do not comprehend. The fact is that Professor Huxley has completely misapprehended the significance of the passages he quotes. No wonder if reasoning perfectly lucid to those who have the key appears a mere "darkening of counsel" to those who have not mastered the elements of the systems they criticise.

To say that Suarez "rejects Mr. Mivart's view" is absurd, because no such view could by any possibility have been present to the mind of any one of his day. To say that anything in the passage quoted is, even in the faintest degree, *inconsistent* with that view, is an utter mistake. This is plain, from the doctrine as to the infusion of every soul into every infant, which was generally received at the period when Suarez wrote.

This doctrine was that the human fœtus is at first animated by a vegetative soul, then by a sentient soul, and only afterwards, at some period before birth, with a rational soul. Not that two souls ever coexist, for the appearance of one coincides with the disappearance of its predecessor—the sentient soul including in it all the powers of the vegetative soul, and the rational soul all those of the two others. The doctrine of distinct souls, which Professor Huxley attributes to me as a fatal consequence of my hypothesis, is simply the doctrine of St. Thomas himself. He says (quæst. lxxvi. art. 3, ad. 3): "Dicendum quod prius embryo habet animam quæ est sensitiva tantum, qua ablata advenit perfectior anima quæ est simul sensitiva et intellectiva ut infra plenius ostendetur." Also (quæst. cxviii. art. 2, ad. 2): "Dicendum est quod anima præexistit in embryone, a principio quidem nutritiva, postmodum autem sensitiva et tandem intellectiva."

He then answers the objection that we should thus have three souls superposed, which, he says, is false because—

> "Nulla forma substantialis accipit majus aut minus, sed superadditio majoris perfectionis facit aliam speciem sicut additio unitatis facit aliam speciem in numero. . . . Ideo dicendum quod cum generatio unius sit corruptio alterius, necesse est dicere quod tam in homine quam in animalibus aliis, quando perfectior forma advenit fit corruptio prioris, ita tamen quod sequens forma habet quidquid habebat prima et adhuc amplius. . . . Sic igitur dicendum quod anima intellectiva creatur a Deo in fine generationis humanæ quæ simul est et sensitiva et nutritiva corruptio formis præexistentibus."

Now I am not saying anything about the truth of this doctrine, but only that it perfectly harmonizes with the hypothesis thrown out; while that it was the doctrine generally held in Suarez's day should be known to every one who writes upon such a subject at all. This agreement between the doctrine and the hypothesis will readily be apprehended, for if Adam was formed in the way of which I suggested the possibility, he would, till the infusion of the rational soul, be only animal vivens et sentiens, and not "homo" at all. But when the rational soul was infused, he thereby, as Suarez justly says, "factus est homo vivens, et consequenter, etiam sentiens."

The dictum, "Nulla est in homine forma educta de potentia materiæ," is nothing to the point, because I never supposed that the "forma rationalis" was in potentia materiæ, but only the "forma sentiens," which would disappear and become non-existent as soon as the "animal," by the infused rationality, becomes "homo." Thus, so far from being inconsistent with my hypothesis, it supports it; for the dictum must have been applied by Suarez to every child, the "forma sentiens" of which he must have allowed to be "educta de potentia materiæ," although the "forma rationalis" in his doctrine, as in my hypothesis, is directly created by God, and is in no way "educta de potentia materiæ." Professor Huxley has read Suarez *ad hoc*, and evidently without the guidance of any one familiar with that author, or with his philosophy, and the natural consequence of writing on such a subject under such circumstances follows of course.

I think that it must now be plain to all readers, from the passages referred to, that there is perfect freedom for even the very strictest Christians, not only as regards the question of the six days, but also with respect to the full doctrine of Evolution.

Solvitur ambulando.

Professor Huxley, indeed, must know well that, in addition to the authority of approved writers of ancient and modern times, there is a *living authority* in the Church. That authority, moreover, is ready at any moment to condemn heresy in the public expressions of any of her children, and certain to detect it; the question as to such views as evolution being tenable *solvitur ambulando.* The Professor congratulates himself prematurely on the "spontaneous retreat of the enemy from nine-tenths of the territory which he occupied ten years ago." Not *one step backwards* has been taken by the enemy Professor Huxley seems to detest above all. In proof of this I can refer to the 'Rambler' of March 1860, wherein a position was at once taken up, which is substantially identical with that which I maintain now.

Christianity and Reason.

Christians owe a debt of gratitude to Professor Huxley for calling forth more clearly the certainty that their religion has nothing to fear from the doctrine of evolution. It is, however, Catholic Christians who are pre-eminently beholden to him for occasioning a fresh demonstration of the wonderful way in which their greatest teachers of bygone centuries, though imbued with the notions and possessing only the rudimentary physical knowledge of their days, have yet been led to emit fruitful principles by which the Church is prepared to assimilate and harmonize even the most advanced teachings of physical science.

Professor Huxley indulges in rhetorical declamation as to a "blind acceptance of authority;" but such acceptance is as much repudiated by me as by Professor Huxley. The Church, in addressing unbelievers, appeals to "reason" and "conscience" alone for the establishment of that Theistic foundation on which she reposes, and no acceptance of authority can be called "blind" which results from a clear perception both of its rational foundation and of the harmony of its dogmas and precepts with those highest faculties of our nature, reason and conscience.

I confess myself weary of these tedious declamations as to the incompatibility of science with Christianity on the one side, as also of timid deprecations on the other. The true position of these two powers justifies neither such hopes nor such fears; for, in truth, no possible development of physical science (and as to Biology I claim to speak with some slight knowledge) can conflict with Christian dogma, and therefore every attempt to attack from that basis is necessarily futile.

On the other hand, so far from the Christian religion tending to cramp or fetter intellectual development, it is notorious that some of the profoundest thinkers of recent as of more ancient times have been believers in Christianity, and I am convinced that every man who rejects that belief is *ipso facto* condemned not only to a moral, but also, and as inevitably, to an intellectual inferiority as compared with what he might attain did he accept that system in its fulness. The Christian creed has long been before the world. I would invite Professor Huxley to formulate his system in distinct propositions, that it also may be tested by our supreme and ultimate standards—"reason" and "conscience."

Mode of controversy.

It remains now but to say, in conclusion, a few words respecting the mode in which Professor Huxley has thought proper to conduct this controversy.

I have already adverted (1) to the unfairness of reproaching me with an ethical error which I was so far from falling into that it was specially pointed out by the Quarterly Reviewer, whom he well knew to be none other than myself.

(2) To his misrepresentation of my words (as p. 445), in that he has made me appear to declare that the theologians referred to asserted "evolution," which he makes synonymous with "derivative creation."

(3) To his positive misquotation, words being placed between inverted commas as if mine, though I never wrote or published them.

The remarkable circumstance however is, that all these three errors, though I called attention to them in my reply, are precisely reproduced in Professor Huxley's volume, entitled 'Critiques and Addresses.' The fact of such republication is the one adverted to in the opening sentence of this chapter, as determining the publication of this Postscript. In that republication Professor Huxley, disregarding my exposure of his misrepresentations as to my arguments, and his misquotation even of my very words, attempts adroitly to shift the issue, and to represent that I have maintained that which I never said, which was never present to my mind, and which is manifestly absurd. Most willingly do *I* leave the "issue alone to the judgment of the public," taking the liberty on my part however to state once more what is the true point at issue. I had maintained, and *do maintain*, that "ancient and most venerable theological authorities distinctly assert derivative creation, and thus their teachings harmonize with all that modern science can possibly require." In reply to this Professor Huxley has shown, what no one dreamed of denying, that Suarez rejected St. Augustin's view as to the *fact* of creation; but in the first place that does not even tend to disprove what I alleged, namely, that ancient and most venerable authorities did assert derivative creation; nor does it render the testimony of Suarez himself one bit less valuable as to the validity of the *principles* on which the doctrine of derivative creation reposes, principles explicitly stated by himself. On the contrary, his testimony in this respect is all the *more* valuable as such principles could not have been laid down to serve any special theory of his own which he desired to maintain.

Restatement of issue.

The "*ignorantia elenchi*" of Professor Huxley's reply was so obvious that it is difficult indeed to credit one so ready witted, with an honest blindness to its defects. The result of the issue which I raised, and Professor Huxley accepted, is so palpable, that I may well cite his own words addressed by him * to Professor Owen in another controversy:—

> "The question has thus become one of personal veracity. For myself I will accept no other issue than this, grave as it is, to the present controversy."

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* 'Man's Place in Nature,' p. 118.

There are yet other words written by him* which may not inaptly be also here quoted:—

> "If a man elect to become a judge of these grave questions; still more, if he assume the responsibility of attaching praise or blame to his fellow-men for the conclusions at which they arrive touching them, he will commit a sin more grievous than most breaches of the Decalogue, unless he avoid a lazy reliance upon the information that is gathered by prejudice and filtered through passion, unless he go back to the prime sources of knowledge—the facts of Nature, and the thoughts of those wise men who for generations past have been her best interpreters."

A retrospect and conclusion.

Leaving, however, the heat and turmoil of mere personal disputes and literary controversies of our own day, let us, in imagination, turn into the cool and peaceful shade of the old Cathedral of San Stefano at Pavia where repose the ashes of the once fervid African, the large-souled Bishop of Hippo. As we stand in contemplation before that venerable shrine, it seems to speak to us with silent but persuasive eloquence of the Church's unity, and of that continuity by which it responds in time to the eternal unchangeableness of its Author. Venerated now, as in early and long past ages, it is nevertheless with the profuse carving of the later or mediæval period that that shrine is decorated; just as the great thoughts of the soul, the remnants of whose earthly tabernacle it shelters, were accepted, revered, and set forth in fresh colours to the mediæval world by his great follower St. Thomas.

In the presence of those justly-revered relics, can any thoughtful mind fail to be struck with awe as he ponders on the pregnant fact that by the agency of such minds as those of St. Augustin and St. Thomas the Church should have unconsciously provided for the reception of modern theories by the emission of fruitful principles and far-reaching definitions, centuries before such theories were promulgated, and when views directly contradicting them were held universally, and even by some of those very men themselves who laid down the principles and definitions referred to? Circumstances so remarkable, such undesigned coincidences which, as *facts*, cannot be denied, must be allowed to have been "preordained" by all those who, being Theists, assert that a "purpose" runs through the whole process of evolution. Such Theists must admit that, however arising or with whatever end, a prescience has watched over the Church's definitions, and that she has been so *guided* in her teaching as to be able to harmonize and assimilate with her doctrines the most modern theories of physical science.

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* 'Fortnightly Review' for November 1874, p. 580.

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